PRODUCT:	Section	Title
Mode eDIN / Control4 DIN Lighting Control System	0	Declaration of Conformity
DIN-02-08 / DIN-C4-DR-DIM8-M DIN-03-04 / DIN-C4-DR-DIM4-M DIN-INT-00-08 / DIN-C4-DR-IOX8-M DIN-NPU-00-01 / DIN-C4-DR-NPU-M DIN-PSU-24V / DIN-C4-DR-PSU-M DIN-RP-05-04 / DIN-C4-DR-RM4-M DIN-UBC-01-05 / DIN-C4-DR-UBC-M EVO-INT-CI-04 / DIN-C4-DR-SW4-M EVO/MBUS-INT-232 / DIN-C4-DR-SER-M EVO-LCD-55 EVO-SGP-55 EVO-SGP-50 EVO-SGP-20	1	Product Description
	2.1 2.2	Harmonised Standards - EMC Harmonised Standards - LVD
	3	Appendix A Product Literature
	4	Appendix B Technical Specification
	5	Appendix C Test Results - EMC
	6	Appendix D Test Results - LVD
	7	Appendix E Test results - CTick

1. PRODUCT DESCRIPTION

1.1 Functional Description

The Mode eDIN / Control 4 DIN Lighting Control System is a highly flexible, scalable, cost effective, DIN rail mounting, modular approach to lighting control, designed to meet the increasing needs of systems integrators, residential developers and designers for simple, yet versatile, lighting controls in a manageable and understandable form factor.

The range includes the following models:

DIN-02-08 / DIN-C4-DR-DIM8-M,
DIN-03-04 / DIN-C4-DR-DIM4-M,
DIN-INT-00-08 / DIN-C4-DR-IOX8-M,
DIN-NPU-00-01 / DIN-C4-DR-NPU-M,
DIN-PSU-24V / DIN-C4-DR-PSU-M,
DIN-RP-05-04 / DIN-C4-DR-RM4-M,
DIN-UBC-01-05 / DIN-C4-DR-UBC-M,
EVO-INT-CI-04 / DIN-C4-DR-SW4-M,
EVO/MBUS-INT-232 / DIN-C4-DR-SER-M,
EVO-LCD-55, EVO-SGP-55, EVO-SGP-50 and EVO-SGP-20

Each model employs modular circuits, or multiples thereof, which contain common electronic components. The EMC characteristics, with respect to both emissions and immunity, and the Safety performance will therefore be the same for each model.

1.2 Limitations on Use

The product should be professionally installed by a competent person or qualified electrician. It is intended for use in audio visual, lighting and security control applications for domestic and commercial premises, e.g. homes, restaurants, retail shops, hotels and offices. It is not designed for use in safety or emergency lighting applications. Installation must be in accordance with the relevant National Wiring Regulations and other applicable regulations. Compliance to the EC Electromagnetic (EMC) and Low Voltage (LVD) Directives may be invalidated if not used or installed according to the published specification.

Further application and connection information is contained in Appendix A. (Section 3.)

1.3 Technical Description

Parts lists, circuit diagrams and manufacturing specifications are contained in Appendix B. (Section 4.)

2. HARMONISED STANDARDS

The relevant harmonised standards applied in respect of EMC Directive 2004/108/EC are:-

2.1.1	**Emissions**	EN55015 : 2006	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

Results of tests carried out 'In House' are included in Appendix C. (Section 5). These show that a representative sample of the product meets the requirements of EN55015.

2.1.2	**Harmonics**	EN61000-3-2 : 2006	Electromagnetic compatibility (EMC) – Part 3: Limits – Section 2: Limits for harmonic current emissions (input current </= 16A per phase).

Results of tests carried out 'In House' are included in Appendix C. (Section 5). These show that a representative sample of the product meets the requirements of EN61000-3-2.

2.1.3	**Voltage Fluctuation**	EN61000-3-3 : 2008	Electromagnetic compatibility (EMC) – Part 3: Limits – Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment rated current </= 16A.

Results of tests carried out 'In House' are included in Appendix C. (Section 5). These show that a representative sample of the product meets the requirements of EN61000-3-3.

2.1.4	**Immunity**	EN61547 : 2009	Equipment for general lighting purposes – EMC Immunity requirements,

Results of tests carried out by EMC Test Club, 126 Great North Road, Hatfield, Hertfordshire, AL9 5JN, UK and 'In House' are included in Appendix C. (Section 5). These show that a representative sample of the product meets the requirements of EN61547.

2. HARMONISED STANDARDS **Continued**

The relevant harmonised standards applied in respect of Low Voltage Directive 73/23/EEC as amended by EC Directive 93/68/EEC and 2006/95/EC are:-

2.3	**Safety**	EN60669-1 : 1999	Switches for household and similar fixed electrical installations – Part 1 : General requirements
		EN60669-2-1 : 2004	Switches for household and similar fixed electrical installations – Part 2-1 : Particular requirements – Electronic switches

Results of tests carried out 'In House' are included in Appendix D. (Section 7). These show that a representative sample of the product meets the requirements of EN60669-1 and EN60669-2-1.

3. APPENDIX A - PRODUCT LITERATURE

3.1 Data sheet.

DIN-02-08 SPECIFICATION SHEET

CONTROLLING THE FUTURE OF LIGHTING

An eight circuit dimmer module rated at 500W per circuit for the control of resistive and inductive lighting loads with the facility to select dimming or switched only operation of any circuit. A custom designed housing provides reliable power handling in a compact format.

PRODUCT INFORMATION

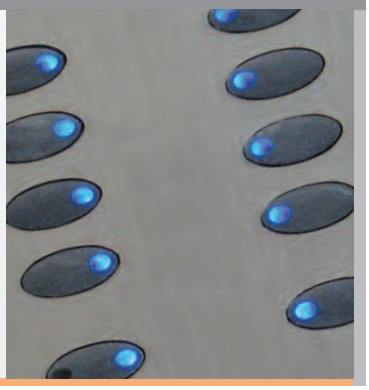
- 8 x 500W Dimmer Module (total 10A maximum)
- Compact 9M width DIN Rail Mounting Module
- Selectable dimming or switching operation
- Programmable circuit Cap and Cup levels
- M-BUS enabled
- Low Load Compatible
- Operates resistive and inductive loads including low voltage electronic transformers (leading edge compatible type only)
- Energy Saving Display
- Quiet operation
- Can be installed as part of a 17th Edition Compliant installation
- Complies with EC EMC and Low Voltage Directives
- CE compliant
- ISO9001 certified design and manufacturing facility

Modules may be used in a standalone mode with simplified functionality providing programmable scene setting or Impulse (ON/OFF/DIM) type control from a single keypad. Alternatively conventional momentary switches can be linked to a Contact Input Module (DIN-INT-00-08) to provide Impulse control of up to eight lighting circuits using eDIN Dimmer Modules.

An on-board menu system provides simple setup of circuit functions, maximum and minimum dimming levels, circuit test facility and power percentage monitoring. eDIN Dimmer modules may also be used in conjunction with a Network Processor Module to provide flexible, adaptable control for small to medium scale projects.

M-BUS CONNECTIVITY

All eDIN Modules are M-BUS enabled and can be used with other Mode Lighting systems. This allows the flexible and compact eDIN Modules to be combined with the highly configurable Evolution System making Mode Lighting products the perfect choice for any scale of project.

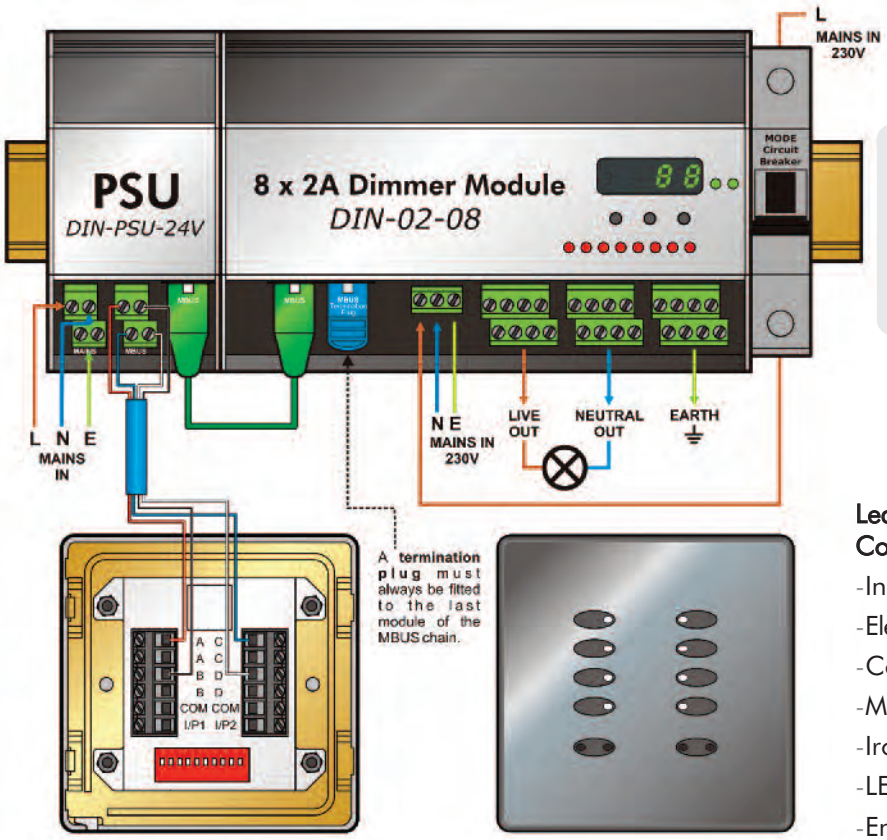


MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

Mode Lighting (UK) Ltd.
The Maltings, 63 High Street,
Ware, Hertfordshire, SG12 9AD,
United Kingdom.
Tel: +44 (0) 1920 462121
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING



NOTE: Switched or dimmed operation and Cap and Cup Ceve as programmable through on-board menu or by cues poased programming or proccessor based systems.

Leading Edge Mains Dimmable or Switched Compatible load types:

-Incandescent / GU10 / Halogen
-Electronic Transformer/Convertor (leading edge)
-Cold Cathode Convertor
-Motor
-Iron core type loads
-LED
-Energy Saver Lamps

INSTALLATION NOTES

eDIN Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

MODEL	8 x 2A Dimmer Module
Part code	DIN-02-08
DIN Module Size	9M
Dimensions	156mm Wide x 100mm High x 64mm Deep
Weight	0.95kg
Power Input	230 Volt ± 10% 50/60Hz, single phase
Input Connections	Rising-cage screw terminals. Max. wire size 2.5mm²
Control Input	Mode M-BUS
M-BUS Connection	2 x RJ-45 (in and out)
M-BUS Current Consumption	80 mA
Outputs	8 dimmed live outputs, 8 neutral connections, 8 earth connections. Rising-cage screw terminals Max. wire size 1.5mm²
Output Type	Leading edge dimming
Channel loading	2A (approx. 500W) per channel resistive or inductive load
Module Loading @ 230V	10A maximum
Ambient Temperature	0 - 40°C
Standards (EC EMC and Low Voltage Directives)	EN55015, EN61547, EN61000-3-2, EN61000-3-3 and EN60669-2-1

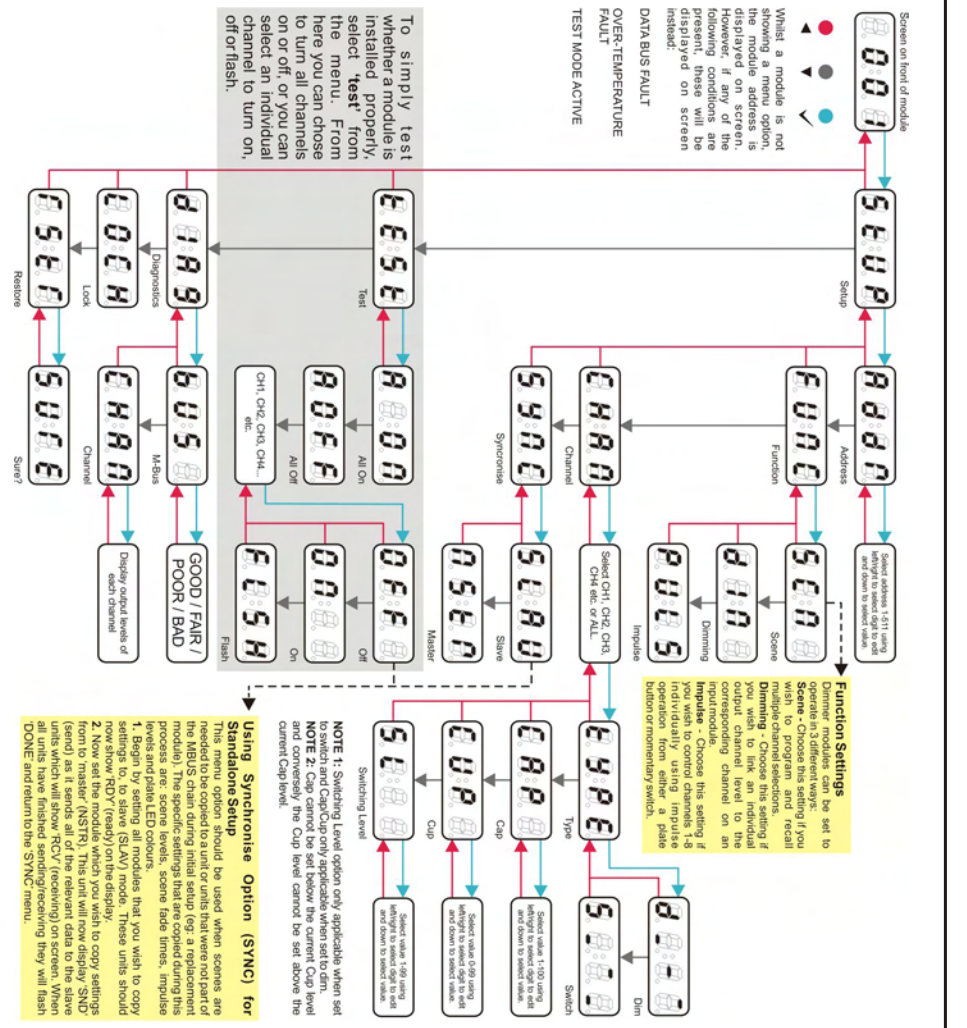
COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and specialist AV installers to ensure the right solution is provided for every individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED assemblies. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

DS000 - V1

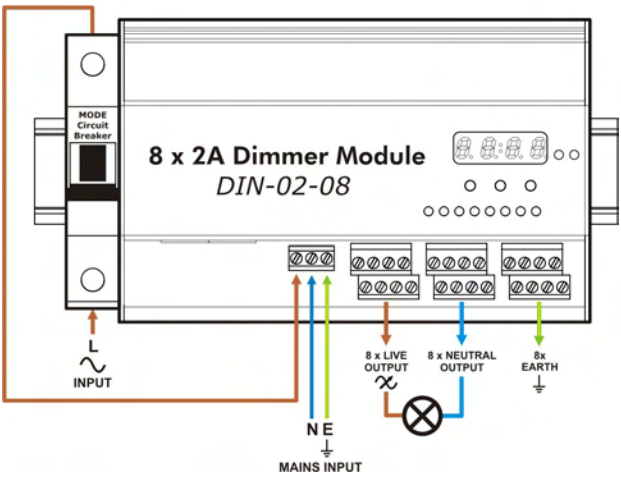
SETUP USING ONBOARD MENU

The on-board menu on all the Control4 modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding a Control4 Network Processor Unit to your setup will allow you to configure your system using Control4 software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:
DATA BUS FAULT
OVER-TEMPERATURE FAULT
TEST MODE ACTIVE
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Setup
Address
Select address 1-511 using left/right to select digit to edit and down to select value
Function
Scene
Dimming
Impulse
Channel
Select CH1, CH2, CH3, CH4 etc. or ALL
Syncronise
Slave
Master
Test
All On
All Off
CH1, CH2, CH3, CH4... etc.
Off
On
Flash
Lock
Diagnostics
M-Bus
Channel
Display output levels of each channel
GOOD / FAIR / POOR / BAD
Restore
Sure?
Function Settings
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an Impulse module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.
Scene - Choose this setting if you wish to program and recall multiple channel selections.
Type
Switch
Dim
Select value 1-100 using left/right to select digit to edit and down to select value
Cap
Select value 0-99 using left/right to select digit to edit and down to select value
Cup
Switching Level
NOTE 1: Switching Level option only applicable when set to switch and Cap/Cup only applicable when set to dim.
NOTE 2: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.
Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show RDY (ready) on the display.
2. Now set the module which you wish to copy settings from to master (MSTR). This unit will now display SND (send) as it sends all of the relevant data to the slave units which will show RCV (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the SYNC menu.

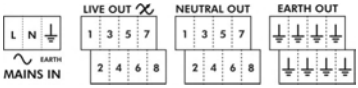
PROTECTION ON MAINS INPUT

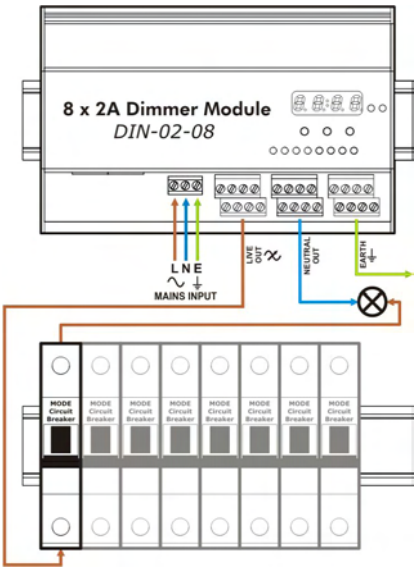
- **IMPORTANT:** Mains input must be protected by 10A maximum type C MCB.



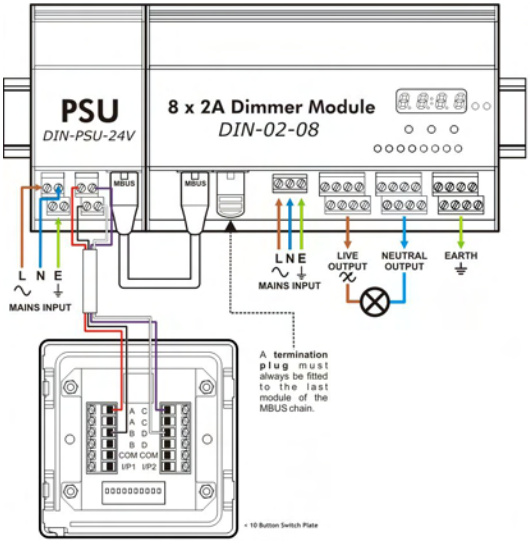
PROTECTION ON OUTPUT CIRCUITS

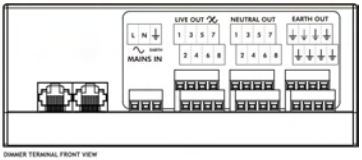
- Output circuits may be protected by suitably rated MCBs as shown if required.
- **IMPORTANT:** Mains input must be protected by 10A maximum type C MCB.





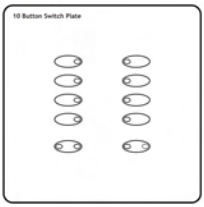
WIRING





IMPORTANT:

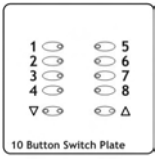
- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply must be protected by a suitably rated MCB.
- Mains input to dimmer module must be protected by 10A maximum type C MCB.



- In order to test an eDIN system once it has been wired together, follow the shaded instructions on the back page.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes of up to 8 circuits using a 10-button single gang switch plate.
Note: The address of the plate must be set to the same address as the dimmer module.



1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following four functions (A, B, C & D) can now be programmed in any order. These are **optional** features and if the settings are not edited then default functions are used.

2

A. Set Scene Levels

To change the **master brightness** of a complete scene, press the Δ or ∇ button to raise or lower **all** channels together.

B. Set Channel Levels

To set the **level** of a channel, press and hold the desired channel button (1-8) and hold Δ or ∇ to raise or lower the brightness level as required.

C. Set Scene Fade Time

To change the **fade time**, begin by pressing and holding the buttons 1 and 5 together for 2 seconds.

Buttons 1-4 will now be illuminated red with varying levels of brightness. The brightest button indicates the fastest fade time. Select a button:

Button 1 = 0 seconds
Button 2 = 2 seconds
Button 3 = 4 seconds
Button 4 = 8 seconds

D. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

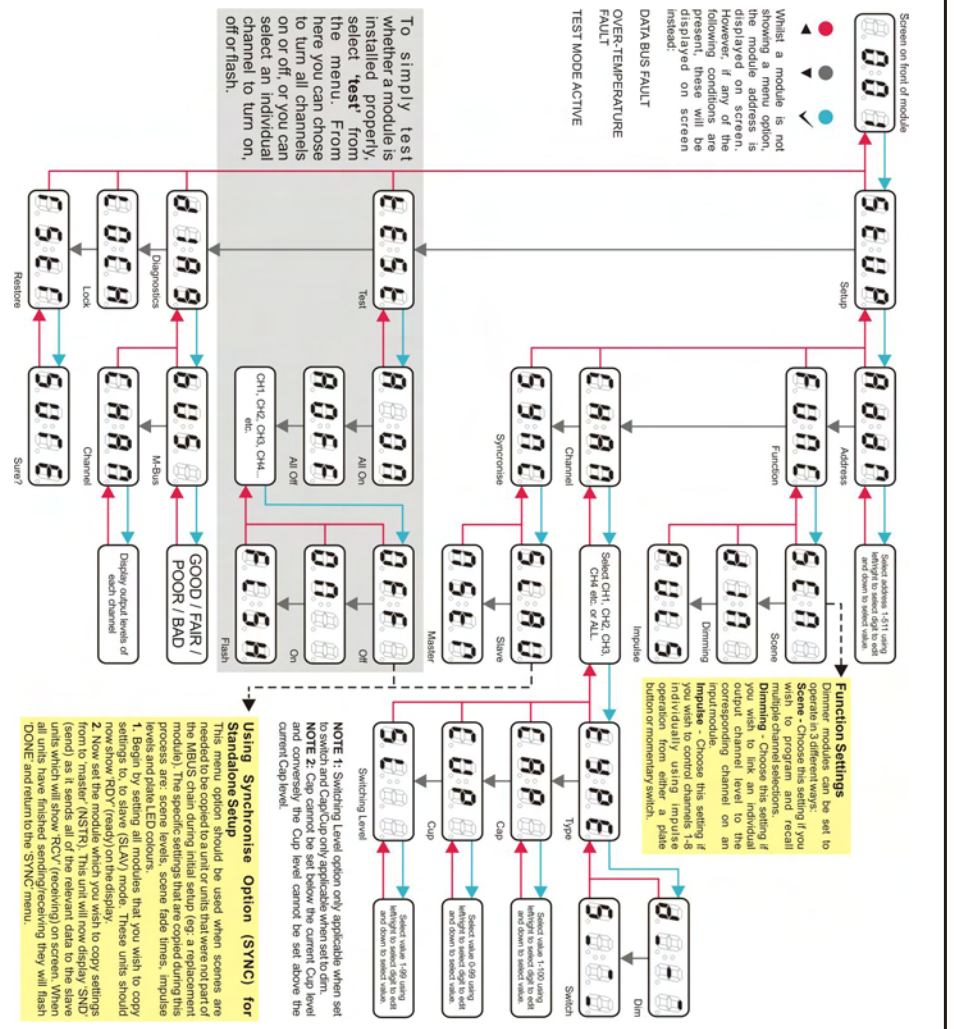
Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.

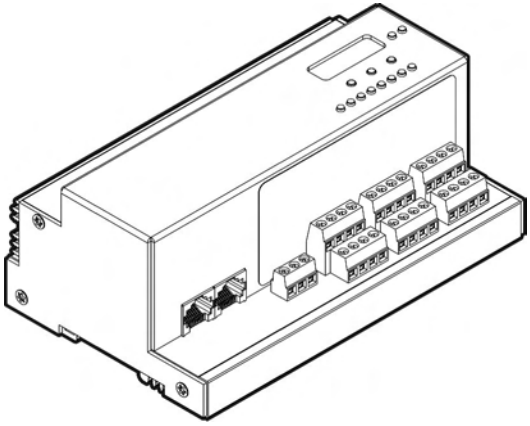
On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

SETUP USING ONBOARD MENU

The on-board menu on all the eDIN modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding an eDIN Network Processor Unit to your setup will allow you to configure your system using eDIN software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:
DATA BUS FAULT
OVER-TEMPERATURE FAULT
TEST MODE ACTIVE
Setup
Address
Select address 1-511 using left/right to select digit to edit and down to select value
Function
Scene
Dimming
Impulse
Channel
Select CH1, CH2, CH3, CH4 etc. or ALL
Syncronise
Slave
Master
Test
All On
All Off
CH1, CH2, CH3, CH4... etc.
Off
On
Flash
Lock
Diagnostics
Display output levels of each channel
M-Bus
GOOD / FAIR / POOR / BAD
Restore
Sure?
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Function Settings
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.
Type
Switch
Dim
Cap
Select value 0-99 using left/right to select digit to edit and down to select value
Cup
Select value 1-99 using left/right to select digit to edit and down to select value
Switching Level
Using Synchronise Option (SYNC) for Standalone Setup
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show RDY (ready) on the display.
2. Now set the module which you wish to copy settings from to master (MSTR). This unit will now display SND (send) as it sends all of the relevant data to the slave units which will show RCV (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the SYNC menu.

NOTE 1: Switching Level option only applicable when set to switch and Cap/Cup only applicable when set to dim.
NOTE 2: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.



Control4
www.control4.com

The DIN-rail mounting modular lighting control solution from Control4.

CONTENTS:

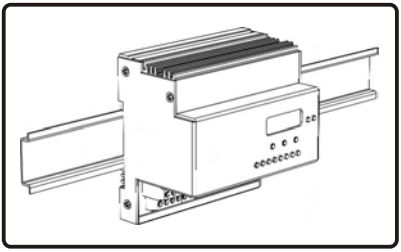
- 8 x 2A Leading Edge Dimmer Module
- 300mm Data-Bus Link Cable

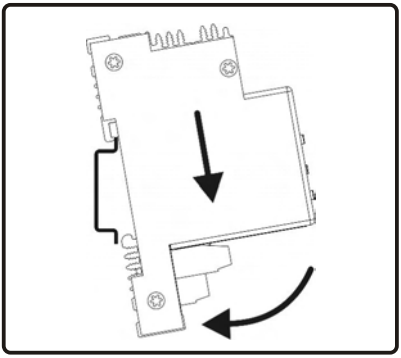
INSTALLATION GUIDE:

8 x 2A Dimmer Module C4-DR-DIM8-M

The Control4 8 x 2A Dimmer module is a 9M sized, leading edge dimmer suitable for inductive or resistive loads of up to 10A total.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

Control4 modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

Dimmer modules produce heat according to loading. Care should be taken that the maximum ambient temperature of 40°C is not exceeded, particularly when installed within small non-ventilated enclosures or when multiple dimmer modules are installed within a single enclosure.

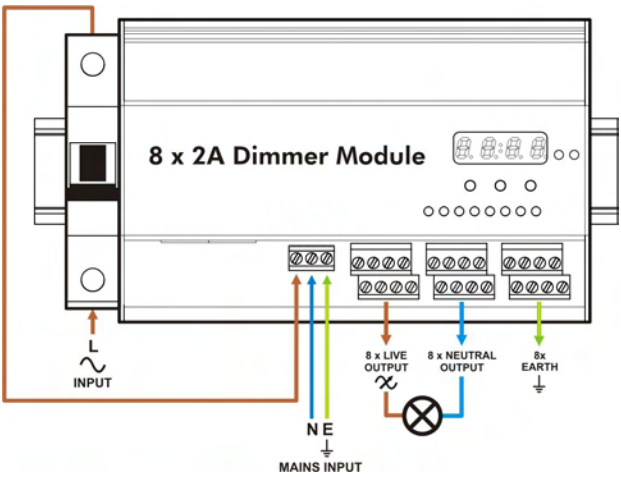
All Control4 modules must be earthed. Modules contain no user

Module Size:	9M, *L*156mm x *W*100mm x *H*64mm
Mains Input:	230V +/- 10% 50/60Hz, single phase
Power Input:	24V, 50 mA max. from data bus
Max. Wire Size:	2.5mm² (input), 1.5mm² (output)
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
Loading:	2A (approx. 500W) per channel resistive or inductive load. Total 10A max.
ta Max:	40°C
tc Max:	80°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

DS205A (V1.1) © Control4, 2010

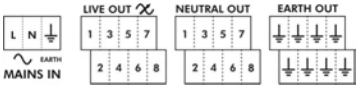
PROTECTION ON MAINS INPUT

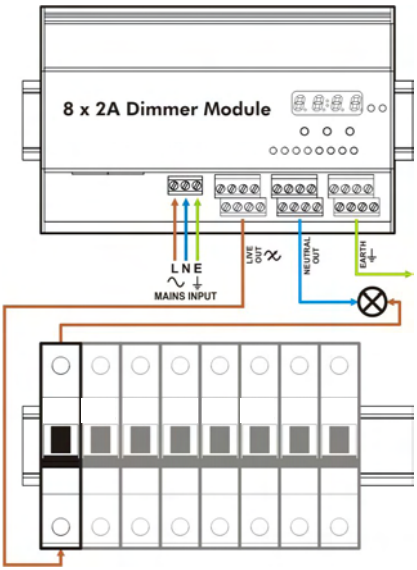
- **IMPORTANT:** Mains input must be protected by 10A maximum type C MCB.



PROTECTION ON OUTPUT CIRCUITS

- Output circuits may be protected by suitably rated MCBs as shown if required.
- **IMPORTANT:** Mains input must be protected by 10A maximum type C MCB.





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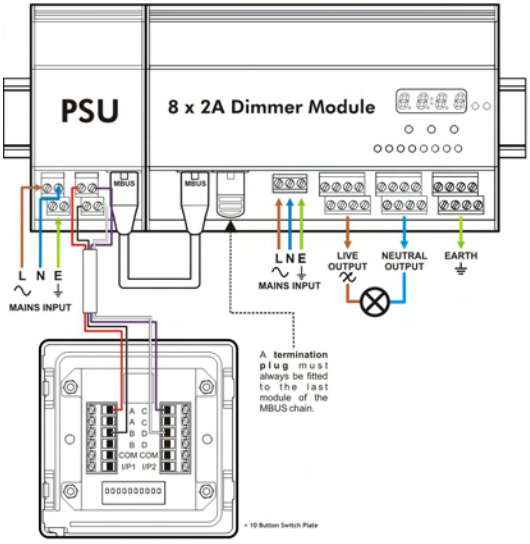
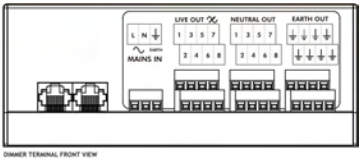
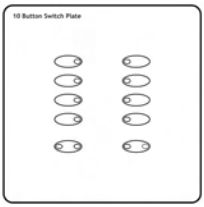
WIRING





IMPORTANT:

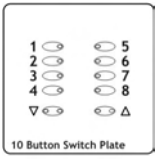
- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply must be protected by a suitably rated MCB.
- Mains input to dimmer module must be protected by 10A maximum type C MCB.



- In order to test a Control4 system once it has been wired together, follow the shaded instructions on the back

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes of up to 8 circuits using a 10-button single gang switch plate.
Note: The address of the plate must be set to the same address as the dimmer module.



1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following four functions (A, B, C & D) can now be programmed in any order. These are **optional** features and if the settings are not edited then default functions are used.

2

A. Set Scene Levels

To change the **master brightness** of a complete scene, press the Δ or ∇ button to raise or lower **all** channels together.

B. Set Channel Levels

To set the **level** of a channel, press and hold the desired channel button (1-8) and hold Δ or ∇ to raise or lower the brightness level as required.

C. Set Scene Fade Time

To change the **fade time**, begin by pressing and holding the buttons 1 and 5 together for 2 seconds.

Buttons 1-4 will now be illuminated red with varying levels of brightness. The brightest button indicates the fastest fade time. Select a button:

Button 1 = 0 seconds
Button 2 = 2 seconds
Button 3 = 4 seconds
Button 4 = 8 seconds

D. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.

On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

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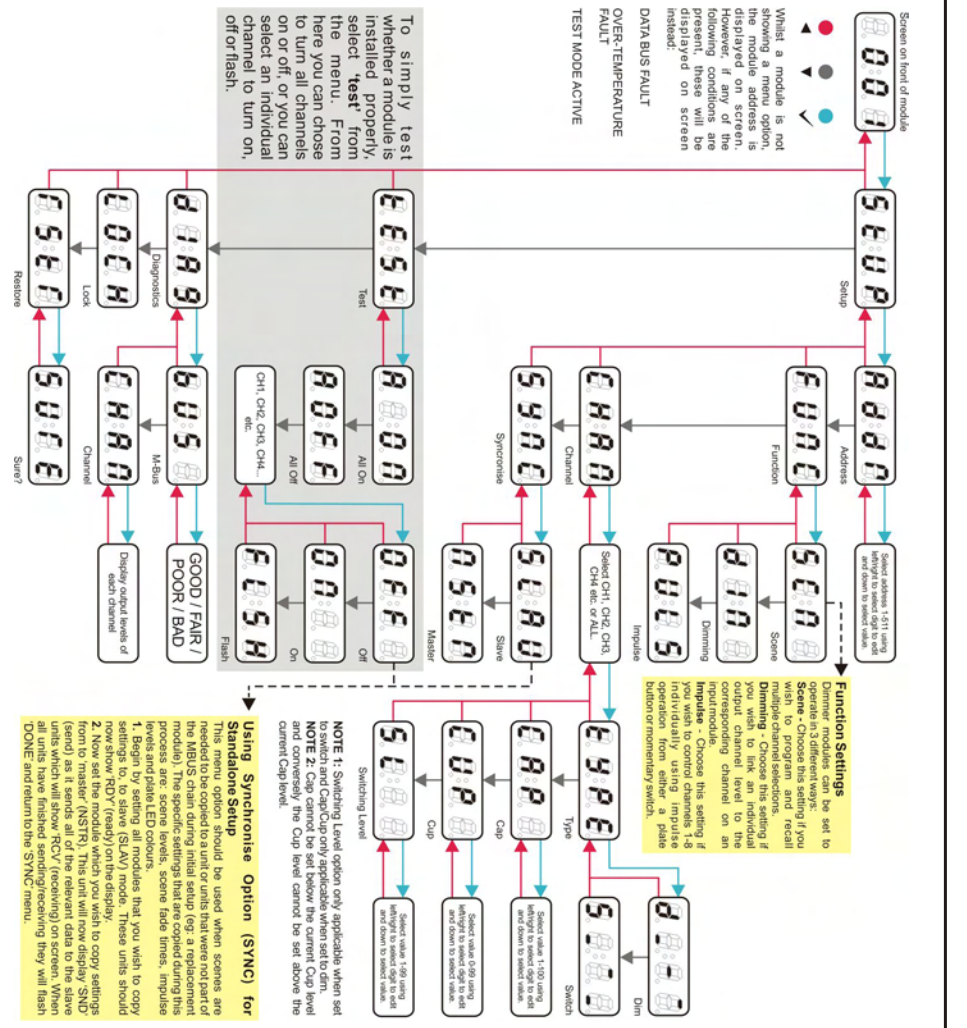
SETUP USING ONBOARD MENU

The on-board menu on all the Control4 modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding a Control4 Network Processor Unit to your setup will allow you to configure your system using Control4 software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:
DATA BUS FAULT
OVER-TEMPERATURE FAULT
TEST MODE ACTIVE
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Setup
Address
Select address 1-511 using left/right to select digit to edit and down to select value
Function
Scene
Dimming
Impulse
Channel
Select CH1, CH2, CH3, CH4 etc. or ALL
Syncronise
Slave
Master
Test
All On
All Off
CH1, CH2, CH3, CH4... etc.
Off
On
Flash
Lock
Diagnostics
M-Bus
Channel
Display output levels of each channel
GOOD / FAIR / POOR / BAD
Restore
Sure?
Function Settings
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an Impulse module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.
Scene - Choose this setting if you wish to program and recall multiple channel selections.
Type
Switch
Dim
Select value 1-100 using left/right to select digit to edit and down to select value
Cap
Select value 0-99 using left/right to select digit to edit and down to select value
Cup
Switching Level
NOTE 1: Switching Level option only applicable when set to switch and Cap/Cup only applicable when set to dim.
NOTE 2: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.
Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show RDY (ready) on the display.
2. Now set the module which you wish to copy settings from to master (MSTR). This unit will now display SND (send) as it sends all of the relevant data to the slave units which will show RCV (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the SYNC menu.

DIN-03-04 SPECIFICATION SHEET

CONTROLLING THE FUTURE OF LIGHTING

A four circuit dimmer module rated at 750W per circuit for the control of resistive and inductive lighting loads with the facility to select dimming or switched only operation of any circuit. A custom designed housing provides reliable power handling in a compact format.

PRODUCT INFORMATION

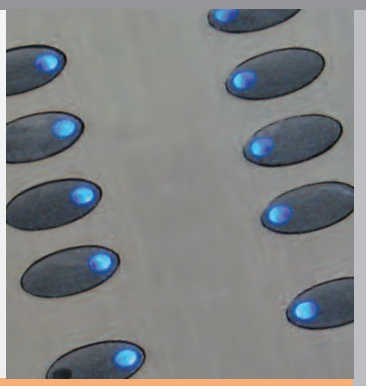
- 4 x 750W Dimmer Module (total 10A maximum)
- Compact 9M width DIN Rail Mounting Module
- Programmable circuit Cap and Cup levels
- Selectable dimming or switching operation
- Operates resistive and inductive loads including low voltage electronic transformers (leading edge compatible type only)
- Low Load Compatible
- M-BUS enabled
- Energy Saving Display
- Quiet operation
- Can be installed as part of a 17th Edition Compliant installation
- Complies with EC EMC and Low Voltage Directives
- CE compliant
- ISO9001 certified design and manufacturing facility

Modules may be used in a standalone mode with simplified functionality providing programmable scene setting or Impulse (ON/OFF/DIM) type control from a single keypad. Alternatively conventional momentary switches can be linked to a Contact Input Module (DIN-INT-00-08) to provide Impulse control of up to eight lighting circuits using eDIN Dimmer Modules.

An on-board menu system provides simple setup of circuit functions, maximum and minimum dimming levels, circuit test facility and power percentage monitoring. eDIN Dimmer modules may also be used in conjunction with a Network Processor Module to provide flexible, adaptable control for small to medium scale projects.

M-BUS CONNECTIVITY

All eDIN Modules are M-BUS enabled therefore may be used with other Mode Lighting systems. Allowing the flexible and compact eDIN Modules to be combined with the highly configurable Evolution System making Mode Lighting products the perfect choice for any scale of project.

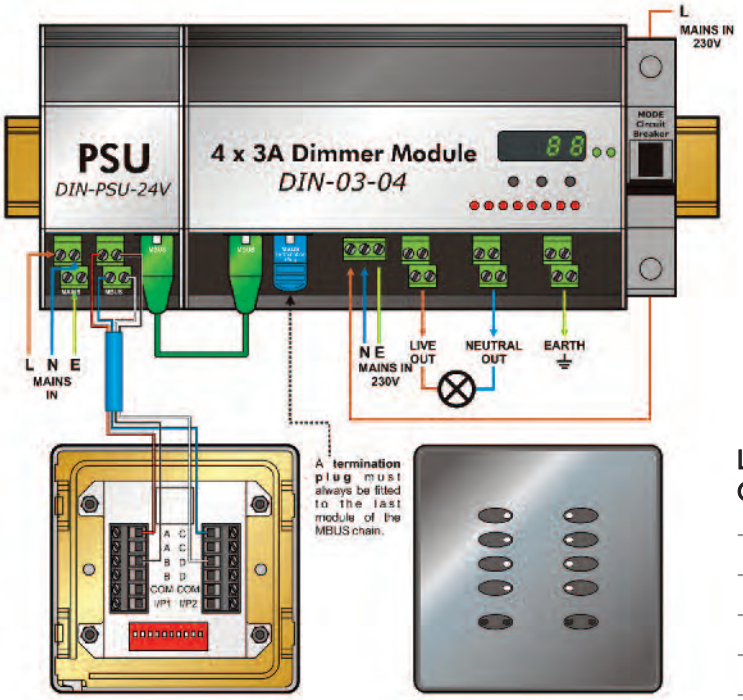


MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

Mode Lighting (UK) Ltd.
The Maltings, 63 High Street,
Ware, Hertfordshire, SG12 9AD,
United Kingdom.
Tel: +44 (0) 1920 462121
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING



NOTE: Switched or dimmed operation and Cap and Cup Ceve as programmable through on-board menu or by cues poased programming or proccessor based systems.

Leading Edge Mains Dimmable or Switched Compatible load types:

-Incandescent / GU10 / Halogen
-Electronic Transformer/Convertor (leading edge)
-Cold Cathode Convertor
-Motor
-Iron core type loads
-LED
-Energy Saver Lamps

INSTALLATION NOTES

eDIN Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

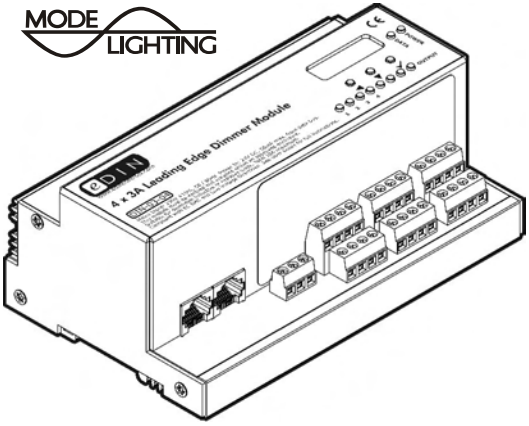
Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

MODEL	4 x 3A Dimmer Module
Part code	DIN-03-04
DIN Module Size	9M
Dimensions	156mm Wide x 100mm High x 64mm Deep
Weight	0.95kg
Power Input	230 Volt +/- 10% 50/60Hz, single phase
Input Connections	Rising-cage screw terminals. Max. wire size 2.5mm^2
Control Input	Mode M-BUS
M-BUS Connection	2 x RJ-45 (in and out)
M-BUS Current Consumption	50 mA
Outputs	4 dimmed live outputs. 4 neutral connections, 4 earth connections. Rising-cage screw terminals Max. wire size 1.5mm^2
Output Control Type	Leading edge dimming
Channel loading	3A (approx. 750W) per channel resistive or inductive load
Module Loading @ 230V	10A maximum
Ambient Temperature	0 - 40^{o}C
Standards (EC EMC and Low Voltage Directives)	EN55015, EN61547, EN61000-3-2, EN61000-3-3 and EN60669-2-1

COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and specialist AV installers to ensure the right solution is provided for every individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED assemblies. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

DS000 - V1



www.edincontrols.com

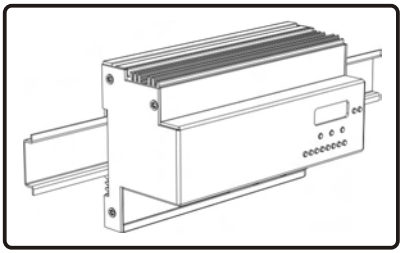
The DIN-rail mounting modular lighting control solution from Mode Lighting.

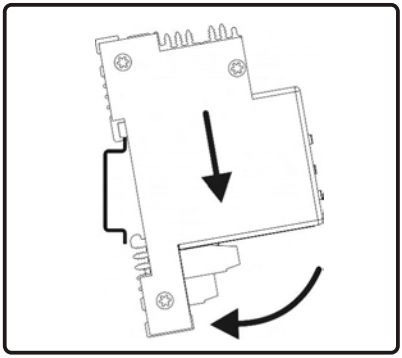
CONTENTS:
- 4 x 3A Dimmer
- 300mm Data-Bus Link Cable

INSTALLATION GUIDE:
4 x 3A Dimmer Module DIN-03-04

The eDIN 8 x 2A Dimmer module is a 9M sized, leading edge dimmer suitable for inductive or resistive loads of up to 10A total.

MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

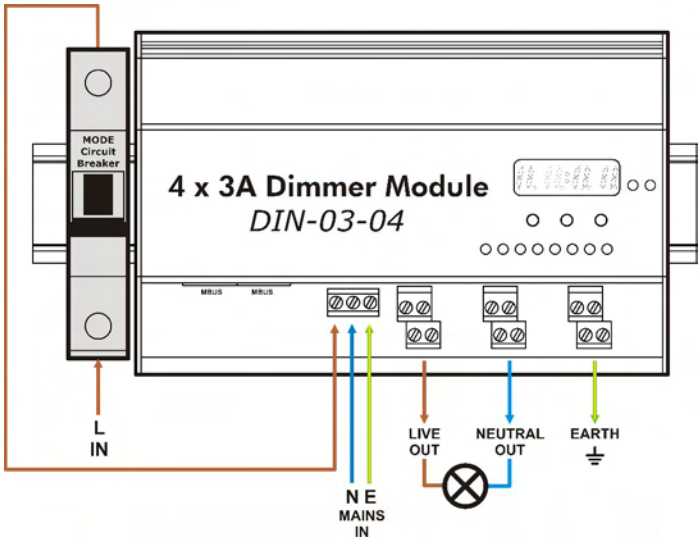
eDIN modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

Dimmer modules produce heat according to loading. Care should be taken that the maximum ambient temperature of 40°C is not exceeded, particularly when installed within small non-ventilated enclosures or when multiple dimmer modules are installed within a single enclosure.

All eDIN modules must be earthed. Modules contain no user serviceable parts and should not be opened.

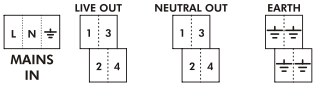
Module Size:	9M, *L*156mm x *W*100mm x *H*64mm
Mains Input:	230V +/- 10% 50/60Hz, single phase
Power Input:	24V, 50 mA max. from data bus
Max. Wire Size:	2.5mm² (input), 1.5mm² (output)
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
Loading:	3A (approx. 700W) per channel resistive or inductive load. Total 10A max.
ta Max:	40°C
tc Max:	80°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

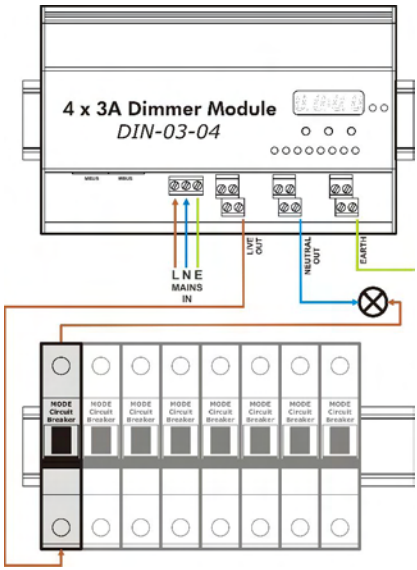
PROTECTION ON MAINS INPUT



PROTECTION ON OUTPUT CIRCUITS

- Output circuits may be protected by suitably rated MCBs as shown if required.
- **IMPORTANT:** Mains input must be protected by 10A maximum type C MCB.





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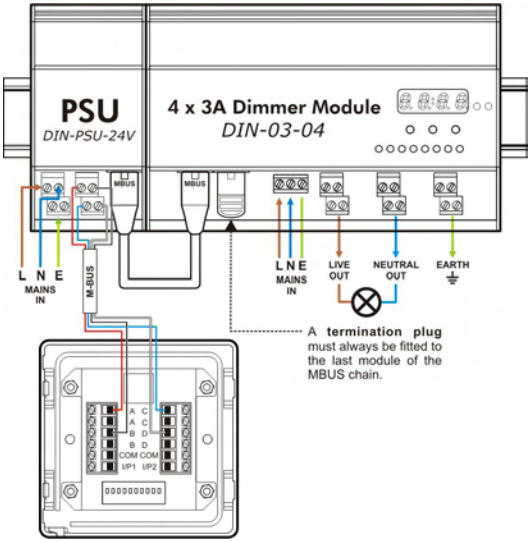
WIRING



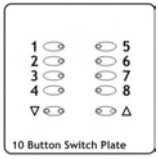
IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply must be protected by a suitably rated MCB.
- Mains input to dimmer module must be protected by 10A maximum type C MCB.

- In order to test an eDIN system once it has been wired together, follow the highlighted instructions on the following page.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes of up to 8 circuits using a 10-button single gang switch plate.
Note: The address of the plate must be set to the same address as the dimmer module.



1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following four functions (A, B, C & D) can now be programmed in any order. These are **optional** features and if the settings are not edited then default functions are used.

2

A. Set Scene Levels

To change the **master brightness** of a complete scene, press the Δ or ∇ button to raise or lower **all** channels together.

B. Set Channel Levels

To set the **level** of a channel, press and hold the desired channel button (1-8) and hold Δ or ∇ to raise or lower the brightness level as required.

C. Set Scene Fade Time

To change the **fade time**, begin by pressing and holding the buttons 1 and 5 together for 2 seconds.

Buttons 1-4 will now be illuminated red with varying levels of brightness. The brightest button indicates the fastest fade time. Select a button:

Button 1 = 0 seconds
Button 2 = 2 seconds
Button 3 = 4 seconds
Button 4 = 8 seconds

D. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

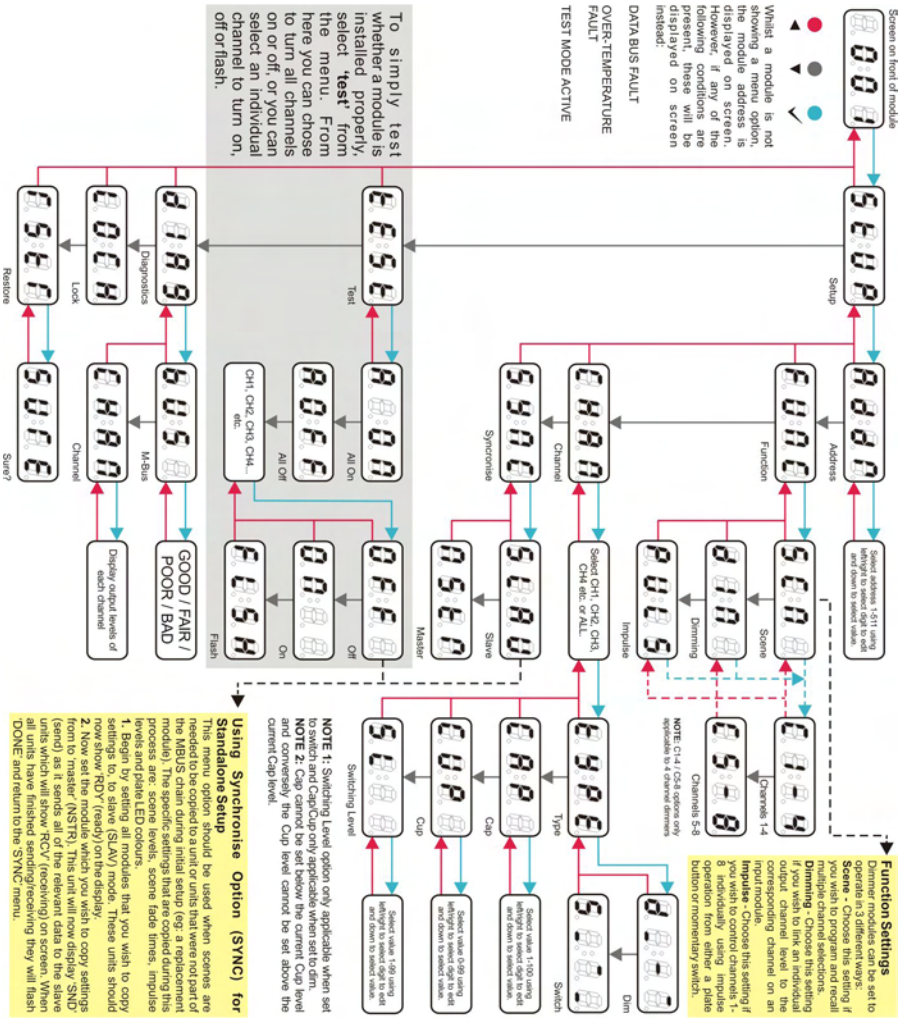
Other Plate Functions

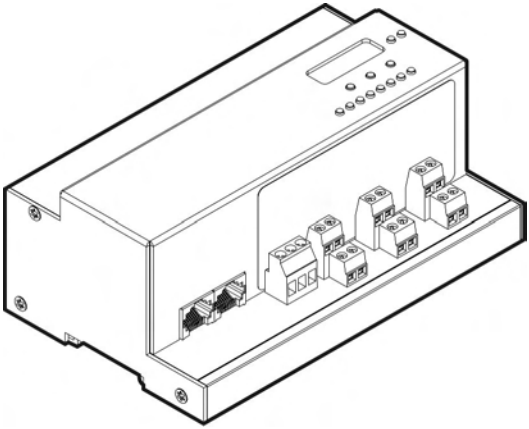
Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.

On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

SETUP USING ONBOARD MENU

The on-board menu on all the eDIN modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding an eDIN Network Processor Unit to your setup will allow you to configure your system using eDIN software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:
DATA BUS FAULT
OVER-TEMPERATURE FAULT
TEST MODE ACTIVE
Setup
Address
Select address 1-511 using left/right to select digit and down to select value.
Function
Scene
Dimming
Channels 1-4
Channels 5-8
NOTE: CH1-4 / CH5-8 options only applicable to 4 channel dimmers
Impulse
Select CH1, CH2, CH3, CH4 etc. or ALL.
Channel
Syncronise
Slave
Master
Test
All On
All Off
CH1, CH2, CH3, CH4, etc.
On
Off
Flash
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Diagnostics
Lock
Restore
M-Bus
Channel
Display output levels of each channel
GOOD / FAIR / POOR / BAD
Sure?
Function Settings
Dimmer modules can be set to operate in 3 different ways:
Scene - Choose this setting if you wish to program and recall scenes using a switch plate.
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.
Dim
Switch
Type
Cap
Cup
Switching Level
Select value 1-100 using left/right to select digit to edit and down to select value.
Select value 0-99 using left/right to select digit to edit and down to select value.
NOTE 1: Switching Level option only applicable when set to switch and Cap/Cup only applicable when set to dim.
NOTE 2: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.
Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show 'RDY' (ready) on the display.
2. Now set the module which you wish to copy settings from to master (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.



Control4
www.control4.com

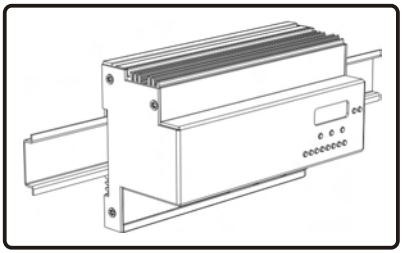
The DIN-rail mounting modular lighting control solution from Control4.

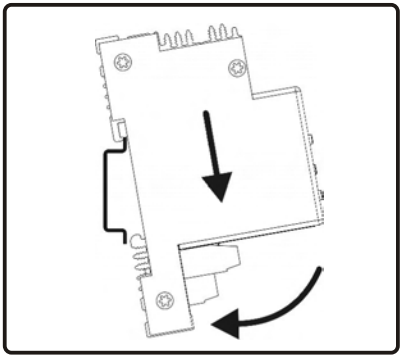
CONTENTS:
- 4 x 3A Dimmer
- 300mm Data-Bus Link Cable

INSTALLATION GUIDE:
4 x 3A Dimmer Module C4-DR-DIM4-M

The Control4 8 x 2A Dimmer module is a 9M sized, leading edge dimmer suitable for inductive or resistive loads of up to 10A total.

MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

Control4 modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

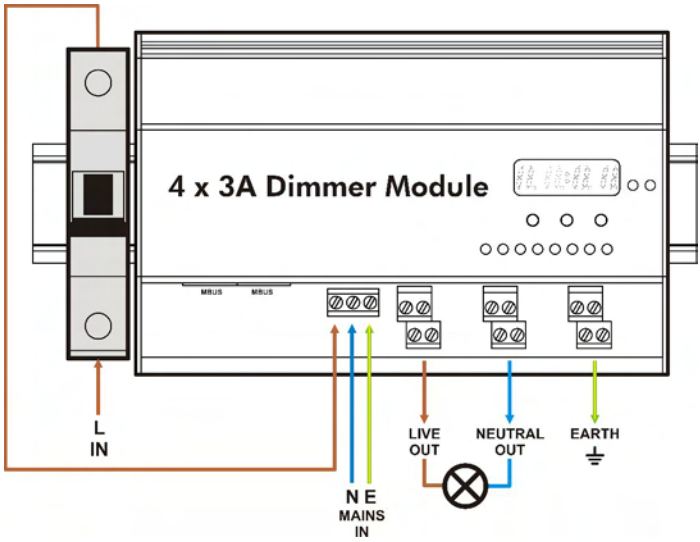
Dimmer modules produce heat according to loading. Care should be taken that the maximum ambient temperature of 40°C is not exceeded, particularly when installed within small non-ventilated enclosures or when multiple dimmer modules are installed within a single enclosure.

All Control4 modules must be earthed. Modules contain no user

Module Size:	9M, *L*156mm x *W*100mm x *H*64mm
Mains Input:	230V +/- 10% 50/60Hz, single phase
Power Input:	24V, 50 mA max. from data bus
Max. Wire Size:	2.5mm² (input), 1.5mm² (output)
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
Loading:	3A (approx. 700W) per channel resistive or inductive load. Total 10A max.
ta Max:	40°C
tc Max:	80°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

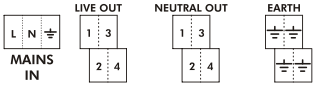
DS212A (V1.1) © Control4 2010

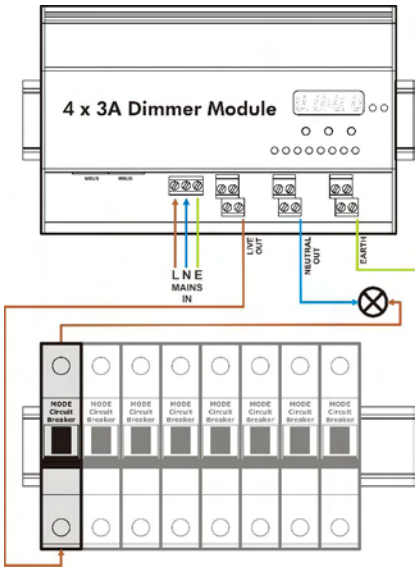
PROTECTION ON MAINS INPUT



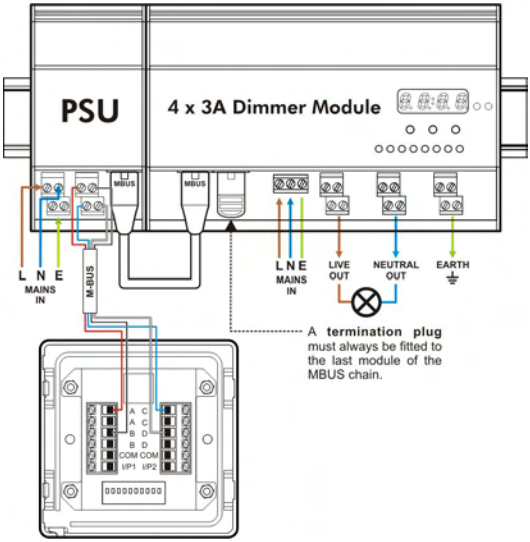
PROTECTION ON OUTPUT CIRCUITS

- Output circuits may be protected by suitably rated MCBs as shown if required.
- **IMPORTANT:** Mains input must be protected by 10A maximum type C MCB.





WIRING



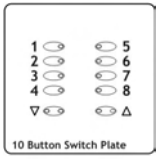
IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply must be protected by a suitably rated MCB.
- Mains input to dimmer module must be protected by 10A maximum type C MCB.

- In order to test a Control4 system once it has been wired together, follow the highlighted instructions on the following page.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes of up to 8 circuits using a 10-button single gang switch plate.
Note: The address of the plate must be set to the same address as the dimmer module.



1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following four functions (A, B, C & D) can now be programmed in any order. These are **optional** features and if the settings are not edited then default functions are used.

2

A. Set Scene Levels

To change the **master brightness** of a complete scene, press the Δ or ∇ button to raise or lower **all** channels together.

B. Set Channel Levels

To set the **level** of a channel, press and hold the desired channel button (1-8) and hold Δ or ∇ to raise or lower the brightness level as required.

C. Set Scene Fade Time

To change the **fade time**, begin by pressing and holding the buttons 1 and 5 together for 2 seconds.

Buttons 1-4 will now be illuminated red with varying levels of brightness. The brightest button indicates the fastest fade time. Select a button:

Button 1 = 0 seconds
Button 2 = 2 seconds
Button 3 = 4 seconds
Button 4 = 8 seconds

D. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.

On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

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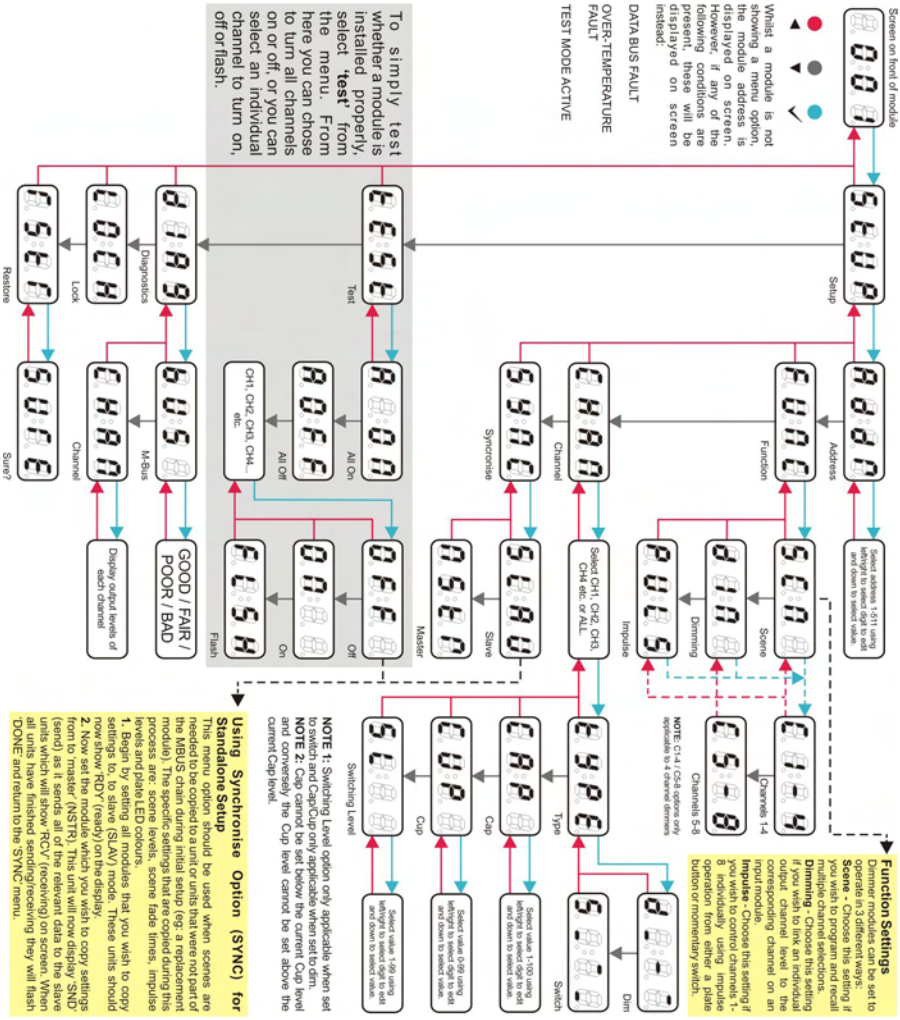
SETUP USING ONBOARD MENU

The on-board menu on all the Control4 modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding a Control4 Network Processor Unit to your setup will allow you to configure your system using Control4 software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:
DATA BUS FAULT
OVER-TEMPERATURE FAULT
TEST MODE ACTIVE
Setup
Address
Select address 1-511 using left/right to select digit and up/down to select value.
Function
Scene
Dimming
Channels 1-4
Channels 5-8
NOTE: CH1-4 / CH5-8 options only applicable to 4 channel dimmers
Impulse
Select CH1, CH2, CH3, CH4 etc. or ALL.
Channel
Syncronise
Slave
Master
Test
All On
All Off
CH1, CH2, CH3, CH4, etc.
On
Off
Flash
Diagnostics
M-Bus
Channel
Display output levels of each channel
Lock
Restore
Sure?
GOOD / FAIR / POOR / BAD
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Function Settings
Dimmer modules can be set to operate in 3 different ways:
Scene - Choose this setting if you wish to program and recall scenes from a switch plate.
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.
Type
Switch
Dim
Cap
Select value 1-100 using left/right to select digit to edit and up/down to select value.
Cup
Select value 0-99 using left/right to select digit to edit and up/down to select value.
Switching Level
Select value 1-99 using left/right to select digit to edit and up/down to select value.
NOTE 1: Switching Level option only applicable when set to switch and Cap/Cup only applicable when set to dim.
NOTE 2: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.
Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show 'RDY' (ready) on the display.
2. Now set the module which you wish to copy settings from to master (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.

DIN-INT-00-08 SPECIFICATION SHEET

CONTROLLING THE FUTURE OF LIGHTING

An eight channel adaptable input/output which can be configured to accept 0-10V, 1-10V, DSI or switched contact as inputs or provide SELV 0-10V, 1-10V, DSI or DMX outputs providing a high level of flexibility and connectivity in a compact housing.

PRODUCT INFORMATION

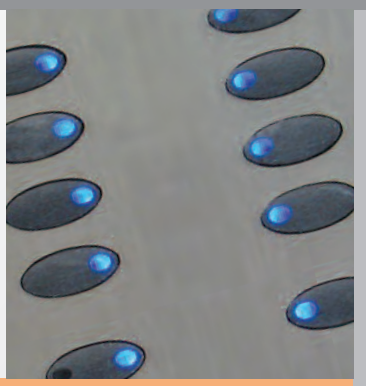
- 8 individually configurable inputs or outputs
- Compact 6M width DIN Rail Mounting Module
- 0-10V or 1-10V input from sensors and controls
- M-BUS enabled
- Contact closure inputs for sensor and switch inputs e.g. PIRs
- 0-10V or 1-10V output for SELV equipment control or integration.
- DSI output for SELV equipment control
- DMX output for SELV equipment control
- Complies with EC EMC and Low Voltage Directives
- CE compliant
- ISO9001 certified design and manufacturing facility

In standalone mode the eDIN configurable interface can provide switch input control to operate eDIN dimmer modules in Impulse (on/off/dim) format. Alternatively, it can operate either as a protocol convertor giving 0-10V or 1-10V to DSI conversion in either direction or as a 0-10V or 1-10V or DSI output module with switch inputs for Impulse style control for SELV equipment.

The DMX facility provides simple control of RGB colour changing devices as an integrated part of an eDIN system. When connected to a Network Processor Module each channel can be individually configured to provide input control of eDIN functions or output signals for control of SELV equipment or other devices. The on-board menu system provides simple setup of channel modes for standalone operation and channel test facilities.

M-BUS CONNECTIVITY

All eDIN Modules are M-BUS enabled and can be used with other Mode Lighting systems. The input/output module can be used to provide additional 1-10V and DSI outputs or analogue or digital inputs or outputs to an Evolution System allowing increased flexibility when specifying larger control systems.



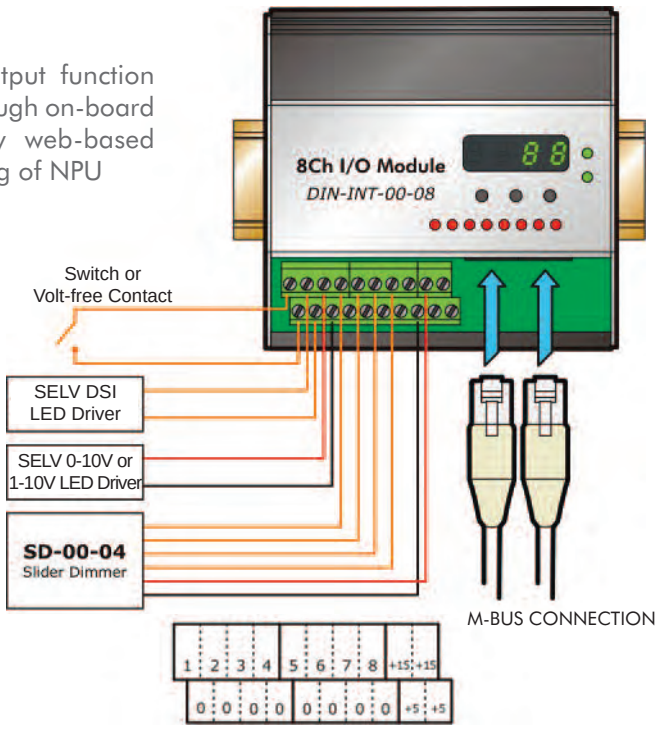
MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

Mode Lighting (UK) Ltd.
The Maltings, 63 High Street,
Ware, Hertfordshire, SG12 9AD,
United Kingdom.
Tel: +44 (0) 1920 462121
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING

Input or Output function selected through on-board menu or by web-based programming of NPU



Control types supported:		
Protocal	Input	Output
0-10V	✓	✓
1-10V	✓	✓
DSI	✓	✓
DMX	*	✓
Volt-Free Contact	✓	#
Infrared	✓	*

* Consult Mode for further information
# Using eDIN Relay Module

INSTALLATION NOTES

eDIN Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

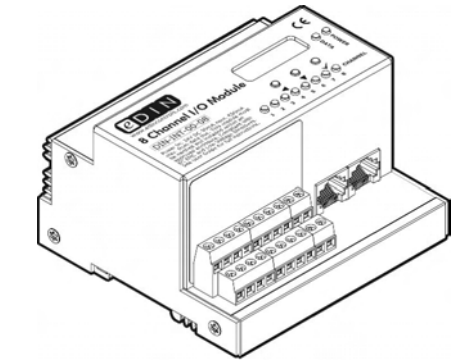
MODEL	Channel Input / Output Interface
Part code	DIN-INT-00-08
DIN Module Size	6M
Dimensions	104mm Wide x 100mm High x 64mm Deep
Weight	0.35kg
Input Voltage	24V DC Supplied through M-BUS Connection
Input Connections	M-Bus Connection
Control Input	Mode M-BUS
M-BUS Connection	2 x RJ-45 (in and out)
M-BUS Current Consumption	Input Mode: 50 mA / Output Mode: Up to 850mA
Control Inputs	0/1-10V input or contact-closure input (configurable as closed / released / held / released
Control Outputs	0/1-10V output or DSI output (configurable)
DMX Output	36 Channels, 12 x 3 channel (RGB Groups)
Channel loading (input)	2mA per channel maximum
Channel loading (output)	250mA per channel maximum
Ambient Temperature	0 - 40°C
Standards (CE, EMC)	EN55015, EN61547, EN61000-3-2, EN61000-3-3 and EN60669-2-1

COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and specialist AV installers to ensure the right solution is provided for every individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED assemblies. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

DS000 - V1

MODE LIGHTING



eDIN

www.edincontrols.com

The DIN-rail mounting modular lighting control solution from Mode Lighting.

CONTENTS:

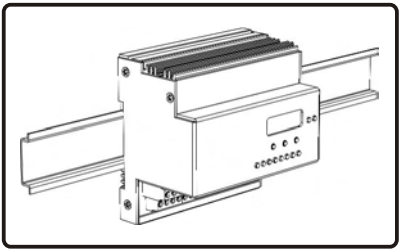
- 8 Channel Input / Output Module
- 300mm Data-Bus Link Cable

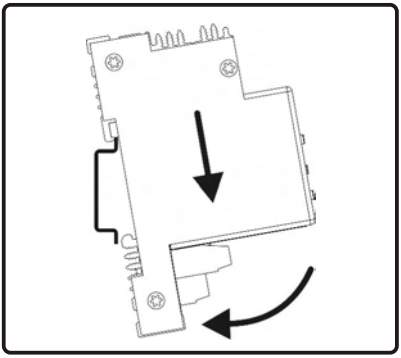
INSTALLATION GUIDE:

8 Channel I/O Module DIN-INT-00-08

The 8 Channel Input / Output module is a 6M sized DIN rail mounted unit which can be configured to accept 0-10V, 1-10V, DSI or switched contact inputs or provide 0-10V, 1-10V, DSI or DMX outputs to SELV (Safety Extra Low Voltage) equipment.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

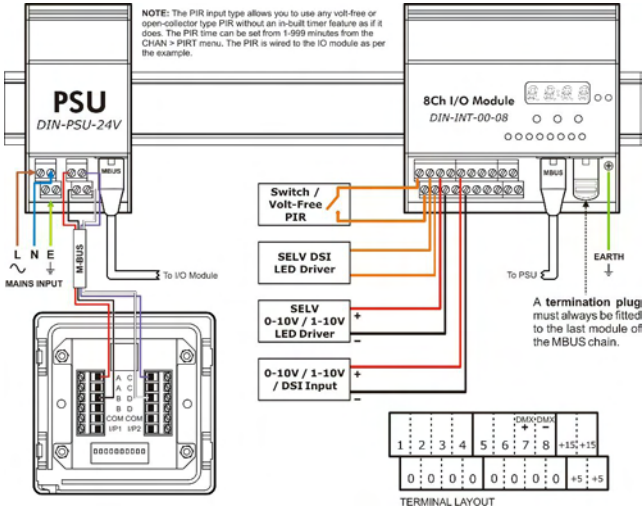
eDIN modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

All eDIN modules must be earthed. Modules contain no user serviceable parts and should not be opened.

Module Size:	6M, L 106mm x W 100mm x H 64mm
Power Input:	24V, 50mA nominal; 850 mA maximum from data bus
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

CE

WIRING


NOTE: The PIR input type allows you to use any volt-free or open-collector type PIR without an in-built timer feature as if it does. The PIR time can be set from 1-999 minutes from the CHAN > PIRT menu. The PIR is wired to the IO module as per the example.
PSU
DIN-PSU-24V
8Ch I/O Module
DIN-INT-00-08
MBUS
L N E
MAINS INPUT
M-BUS
To I/O Module
Switch / Volt-Free PIR
SELV DSI LED Driver
SELV 0-10V / 1-10V LED Driver
0-10V / 1-10V / DSI Input
To PSU
EARTH
A termination plug must always be fitted to the last module of the MBUS chain.
A C
A C
B D
B D
COM COM
I/P1 I/P2
DMX DMX
1 2 3 4 5 6 7 8 +15 +15
0 0 0 0 0 0 0 0 +5 +5
TERMINAL LAYOUT

SUPPORTED CONTROL TYPES

Protocol	Input	Output
0-10V	✓	✓
1-10V	✓	✓
DSI	✓	✓
DMX	◆	✓
Volt-Free Contact	✓	○
Infrared	◆	✗

✗ Not Supported
✓ Supported
○ Supported using eDIN Relay Module
◆ Please contact Mode Lighting for further technical information

- In order to test an eDIN system once it has been wired together, follow the shaded instructions on the back page.

IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply must be protected by a suitably rated MCB.
- Use only with SELV equipment. To control fluorescent ballasts with DALI, DSI or 1-10v use an eDIN Universal Ballast Controller Module, DIN-UBC-01-05.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes of up to 8 circuits using a 10-button single gang switch plate.
Note: The address of the plate must be set to the same address as the IO module.

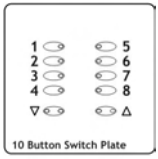
1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following four functions (A, B, C & D) can now be programmed in any order. These are **optional** features and if the settings are not edited then default functions are used.



2

A. Set Scene Levels

To change the **master brightness** of a complete scene, press the Δ or ∇ button to raise or lower **all** channels together.

B. Set Channel Levels

To set the **level** of a channel, press and hold the desired channel button (1-8) and hold Δ or ∇ to raise or lower the brightness level as required.

C. Set Scene Fade Time

To change the **fade time**, begin by pressing and holding the buttons 1 and 5 together for 2 seconds.

Buttons 1-4 will now be illuminated red with varying levels of brightness. The brightest button indicates the fastest fade time. Select a button:

Button 1 = 0 seconds
Button 2 = 2 seconds
Button 3 = 4 seconds
Button 4 = 8 seconds

D. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

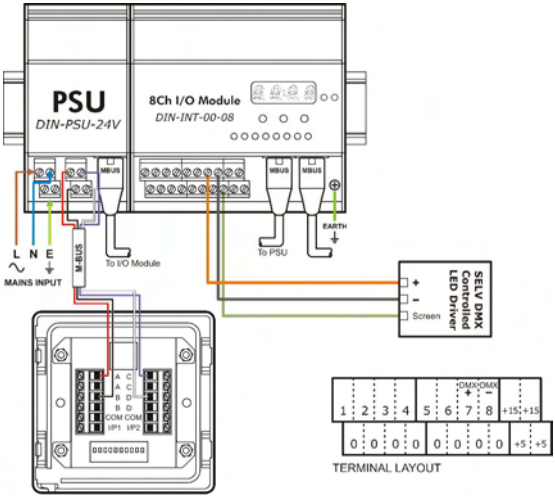
Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.
On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

DMX OUTPUT WIRING EXAMPLE

IMPORTANT:

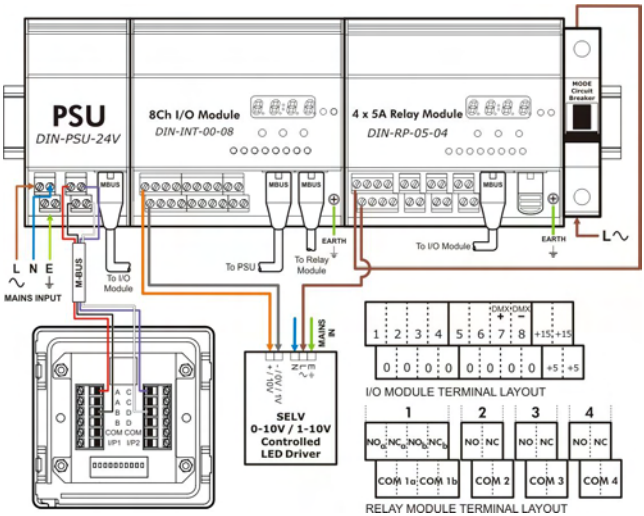
- Mains input to power supply must be protected by a suitably rated MCB.
- Use only with SELV equipment. To control fluorescent ballasts with DALI, DSI or 1-10v use an eDIN Universal Ballast Controller Module.



0-10V OR 1-10V OUTPUT EXAMPLE

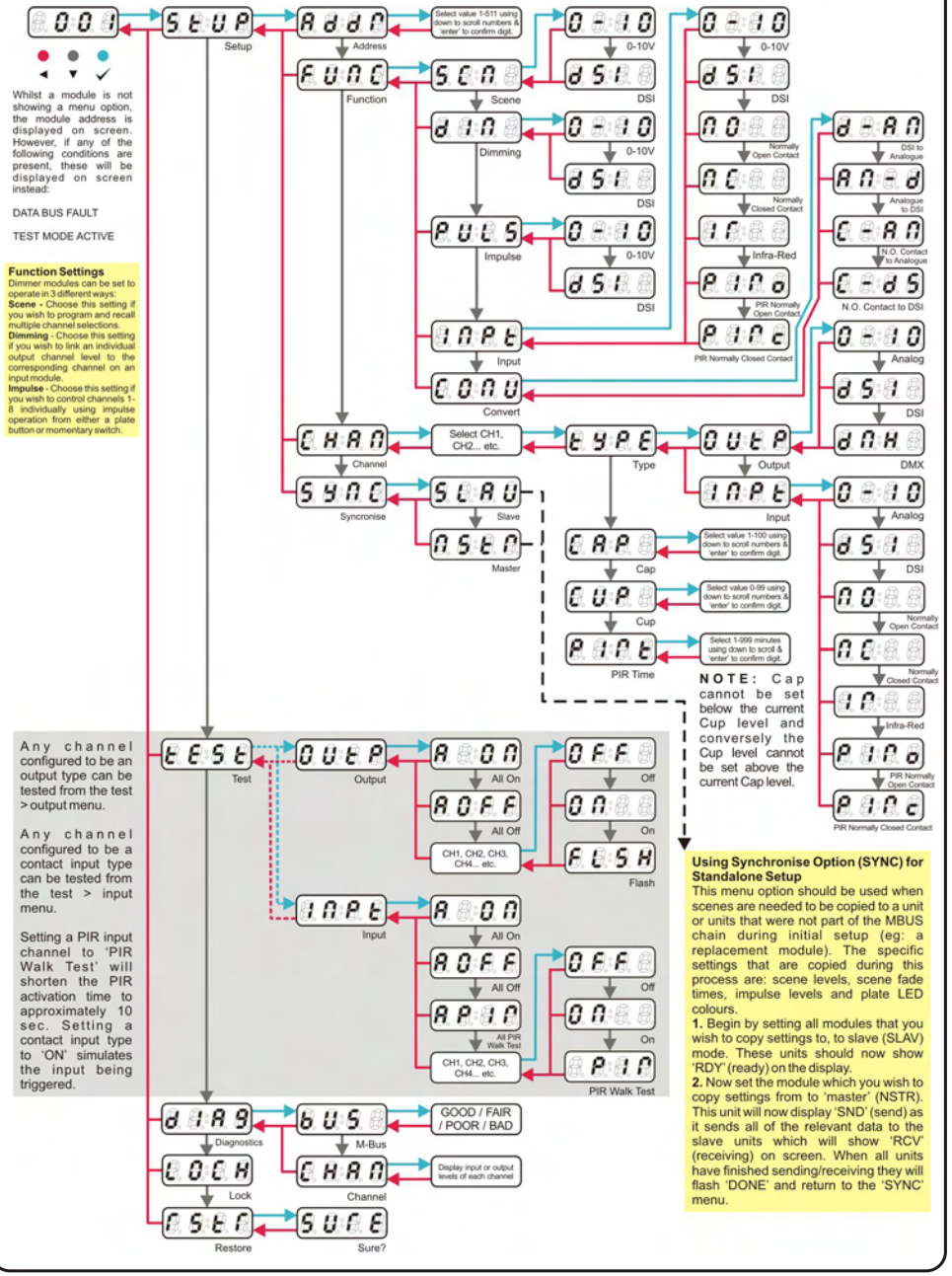
IMPORTANT:

- Mains input to power supply and relay must be protected by suitably rated MCBs.
- Use only with SELV equipment. To control fluorescent ballasts with DALI, DSI or 1-10v use an eDIN Universal Ballast Controller Module.



SETUP USING ONBOARD MENU

The on-board menu on all the eDIN modules is used to setup a device for use in **standalone** mode. Alternatively, adding an eDIN Network Processor Unit to your setup will allow you to configure your system using eDIN software, operated using a web browser via an ethernet connection.



Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:

DATA BUS FAULT

TEST MODE ACTIVE

Function Settings
Dimmer modules can be set to operate in 3 different ways:
Scene - Choose this setting if you wish to program and recall multiple channel selections.
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.

Any channel configured to be an output type can be tested from the test > output menu.

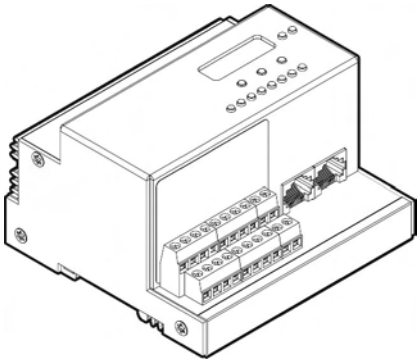
Any channel configured to be a contact input type can be tested from the test > input menu.

Setting a PIR input channel to 'PIR Walk Test' will shorten the PIR activation time to approximately 10 sec. Setting a contact input type to 'ON' simulates the input being triggered.

NOTE: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.

Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene level, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show 'RDY' (ready) on the display.
2. Now set the module which you wish to copy settings from to 'master' (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.

DS207 V1.2.1 © Mode Lighting 2010



Control4
www.control4.com

The DIN-rail mounting modular lighting control solution from Control4.

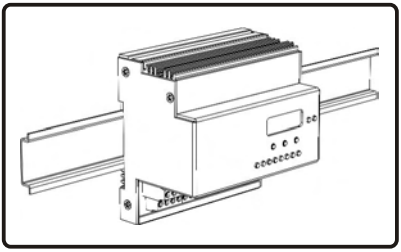
CONTENTS:
- 8 Channel Input / Output Module
- 300mm Data-Bus Link Cable

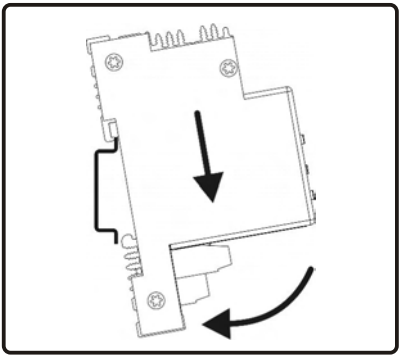
INSTALLATION GUIDE:

8 Channel I/O Module C4-DR-IOX8-M

The 8 Channel Input / Output module is a 6M sized DIN rail mounted unit which can be configured to accept 0-10V, 1-10V, DSI or switched contact inputs or provide 0-10V, 1-10V, DSI or DMX outputs to SELV (Safety Extra Low Voltage) equipment.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

Control4 modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

All Control4 modules must be earthed. Modules contain no user serviceable parts and should not be

Module Size:	6M, L 106mm x W 100mm x H 64mm
Power Input:	24V, 50mA nominal; 850 mA maximum from data bus
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

CE

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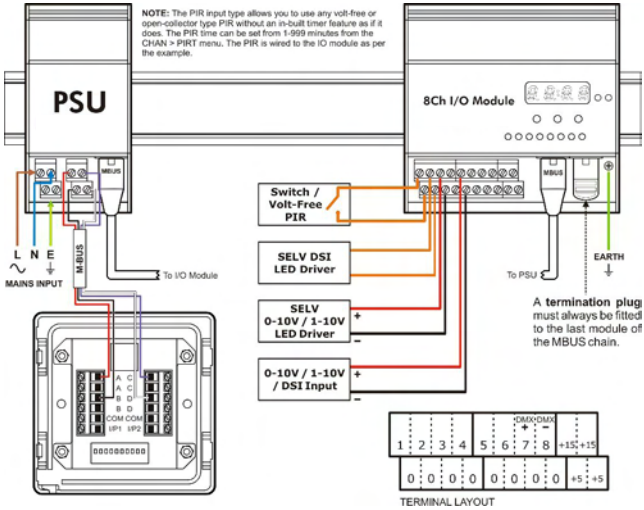
WIRING


NOTE: The PIR input type allows you to use any volt-free or open-collector type PIR without an in-built timer feature as if it does. The PIR time can be set from 1-999 minutes from the CHAN > PIRT menu. The PIR is wired to the IO module as per the example.
PSU
8Ch I/O Module
MBUS
L N E
MAINS INPUT
M-BUS
To I/O Module
To PSU
EARTH
A termination plug must always be fitted to the last module of the MBUS chain.
Switch / Volt-Free PIR
SELV DSI LED Driver
SELV 0-10V / 1-10V LED Driver
0-10V / 1-10V / DSI Input
A C A C B D B D COM COM 1P1 1P2
DMX DMX
1 2 3 4 5 6 7 8 +15 +15
0 0 0 0 0 0 0 0 +5 +5
TERMINAL LAYOUT

SUPPORTED CONTROL TYPES

Protocol	Input	Output
0-10V	✓	✓
1-10V	✓	✓
DSI	✓	✓
DMX	◆	✓
Volt-Free Contact	✓	○
Infrared	◆	✗

✗ Not Supported

✓ Supported

○ Supported using Control4 Relay

◆ Please contact Mode Lighting for further technical information

- In order to test a Control4 system once it has been wired together, follow the shaded instructions on the back

IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply must be protected by a suitably rated MCB.
- Use only with SELV equipment. To control fluorescent ballasts with DALI, DSI or 1-10v use a Control4 Universal Ballast Controller Module, DIN-UBC-01-05.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes of up to 8 circuits using a 10-button single gang switch plate.
Note: The address of the plate must be set to the same address as the IO module.

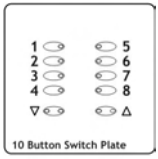
1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following four functions (A, B, C & D) can now be programmed in any order. These are **optional** features and if the settings are not edited then default functions are used.



10 Button Switch Plate

2

A. Set Scene Levels

To change the **master brightness** of a complete scene, press the △ or ▽ button to raise or lower **all** channels together.

B. Set Channel Levels

To set the **level** of a channel, press and hold the desired channel button (1-8) and hold △ or ▽ to raise or lower the brightness level as required.

C. Set Scene Fade Time

To change the **fade time**, begin by pressing and holding the buttons 1 and 5 together for 2 seconds.

Buttons 1-4 will now be illuminated red with varying levels of brightness. The brightest button indicates the fastest fade time. Select a button:

Button 1 = 0 seconds
Button 2 = 2 seconds
Button 3 = 4 seconds
Button 4 = 8 seconds

D. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press △ to **include** the channel or ▽ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.

On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ▽ button. A contact closure on Input 2 has the same effect as pressing the △ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

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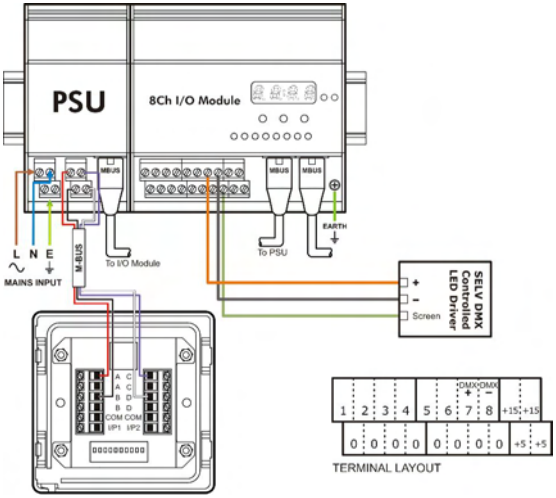
DMX OUTPUT WIRING EXAMPLE

IMPORTANT:

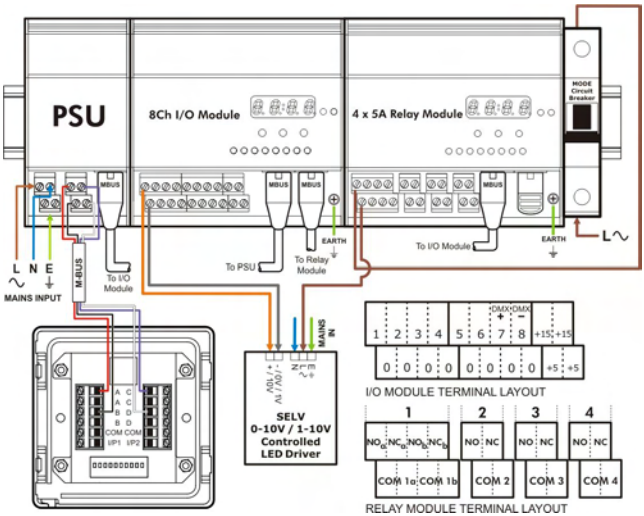
- Mains input to power supply must be protected by a suitably rated MCB.
- Use only with SELV equipment. To control fluorescent ballasts with DALI, DSI or 1-10v use a Control4 Universal Ballast Controller Module.



0-10V OR 1-10V OUTPUT EXAMPLE

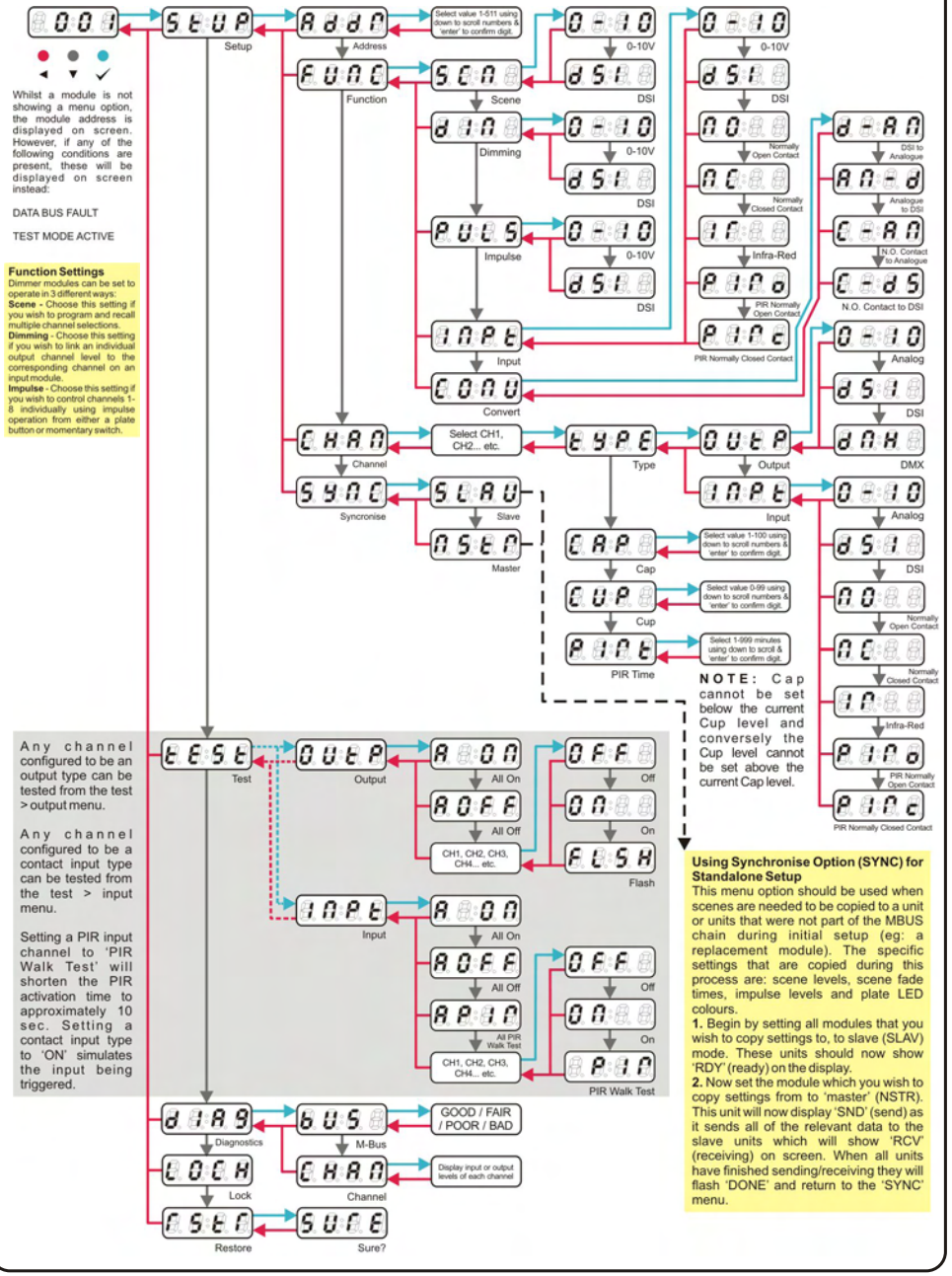
IMPORTANT:

- Mains input to power supply and relay must be protected by suitably rated MCBs.
- Use only with SELV equipment. To control fluorescent ballasts with DALI, DSI or 1-10v use a Control4 Universal Ballast Controller Module.



SETUP USING ONBOARD MENU

The on-board menu on all the Control4 modules is used to setup a device for use in **standalone** mode. Alternatively, adding a Control4 Network Processor Unit to your setup will allow you to configure your system using Control4 software, operated using a web browser via an ethernet connection.



Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:

DATA BUS FAULT

TEST MODE ACTIVE

Function Settings
Dimmer modules can be set to operate in 3 different ways:
Scene - Choose this setting if you wish to program and recall multiple channel selections.
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.

Any channel configured to be an output type can be tested from the test > output menu.

Any channel configured to be a contact input type can be tested from the test > input menu.

Setting a PIR input channel to 'PIR Walk Test' will shorten the PIR activation time to approximately 10 sec. Setting a contact input type to 'ON' simulates the input being triggered.

NOTE: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.

Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene level, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show 'RDY' (ready) on the display.
2. Now set the module which you wish to copy settings from to 'master' (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.

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DIN-NPU-00-01 SPECIFICATION SHEET

CONTROLLING THE FUTURE OF LIGHTING

With web based setup and remote network operation the eDIN Network Processor Module expands the capabilities of the eDIN range enabling versatile lighting control in multiple rooms which can be further extended using the built-in RS232 and Ethernet connections to include full integration with modern multi-media systems

PRODUCT INFORMATION

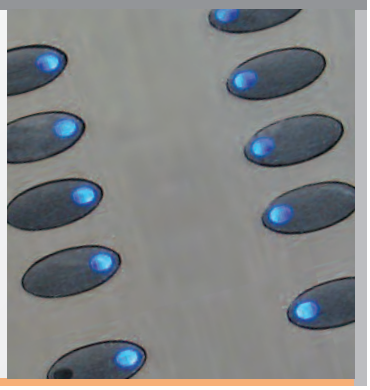
- Simple web based programming & operation
- Remote control through Ethernet
- Integration by RS232 or TCP/IP (Telnet)
- M-BUS enabled
- Astronomical Time Clock
- Only one NPU required per eDIN network
- Scene Setting, Toggle & Impulse functionality
- Compact 6M width DIN Rail Mounting Module
- Complies with EC EMC and Low Voltage Directives
- CE compliant
- ISO9001 certified design and manufacturing facility
- Future ready for energy monitoring and reporting

The Network Processor Module allows the setup and operation of integrated lighting controls, for appartments, home cinemas, boardrooms, auditoriums and multi-room applications. Onboard RS232 and Ethernet connections provide interfacing to third party devices to allow control from multi media and building management systems. Commands can be configured by the programmer with built in command sets available for a number of different devices.

An onboard astronomical time clock allows for easy setup of automated events for security and energy saving applications. System configuration is carried out using the Ethernet port, either by direct connection into the Network Processor Module or through a Local Area Network. All features of an eDIN system can be configured through the web browser with different levels of access available for programming support engineers and users.

M-BUS CONNECTIVITY

The eDIN Control System from Mode Lighting allows individual modules to be selected to create the desired lighting system. From simple standalone systems for individual rooms to a fully connected and integrated multi-room system, eDIN modules can adapt to suit the project requirements.



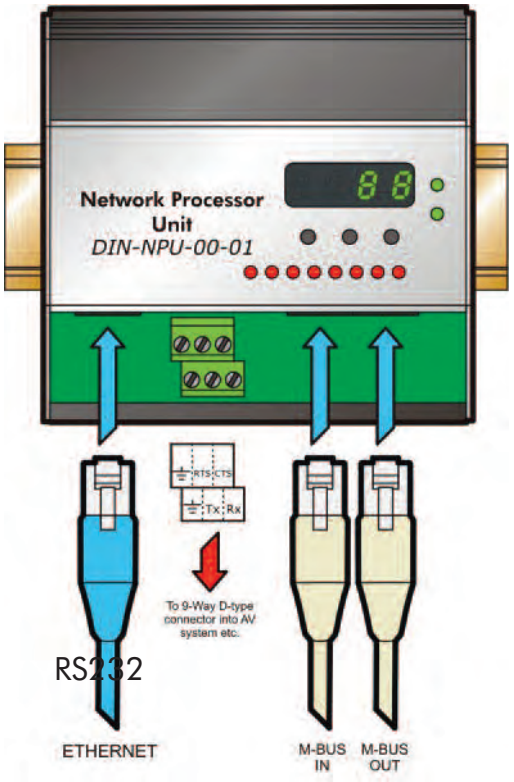
MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

Mode Lighting (UK) Ltd.
The Maltings, 63 High Street,
Ware, Hertfordshire, SG12 9AD,
United Kingdom.
Tel: +44 (0) 1920 462121
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING

Website
Lighting Manager
Hardware Monitor
Configuration



INSTALLATION NOTES

eDIN Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

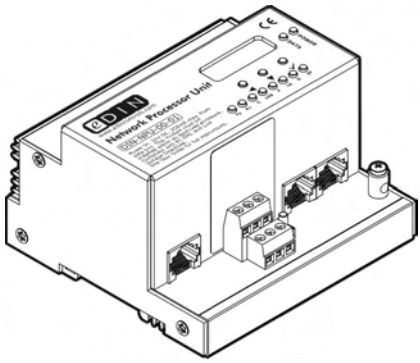
MODEL	Network Processor Unit
Part code	DIN-NPU-00-01
DIN Module Size	6M
Dimensions	104mm Wide x 100mm High x 64mm Deep
Weight	0.35Kg
Input Voltage	24V DC - Supplied through M-BUS Connection
Input Connections	M-BUS Connection
Control Input (1)	Mode M-BUS
M-BUS Connection	2 x RJ-45 (in and out)
M-BUS Current Consumption	250mA
Control Input (2)	RS232 (Bi directional) with RIS/LTS
RS232 Connection	1 x 6-way rising-cage screw terminals. Maximum wire size 1.5mm²
Control Input (3)	Ethernet TCP/IP (10/100M-Bits)
Ethernet Connection	1 x RJ-45
Ambient Temperature	0 - 40°C
Standards (EC EMC and Low Voltage Directives)	EN55015, EN61547, EN61000-3-2, EN61000-3-3 and EN60669-2-1

COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and specialist AV installers to ensure the right solution is provided for every individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED assemblies. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

DS000 - V1

MODE LIGHTING



www.edincontrols.com

The DIN-rail mounting modular lighting control solution from Mode Lighting.

CONTENTS:

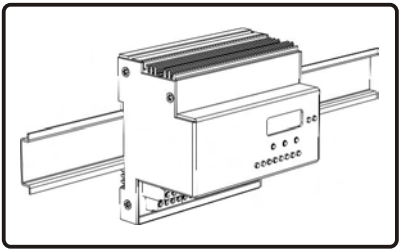
- Network Processor Unit
- 300mm Data-Bus Link Cable
- User Manual CD-ROM

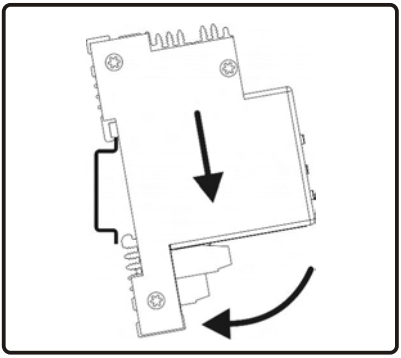
INSTALLATION GUIDE:

Network Processor Unit DIN-NPU-00-01

The Network Processor Unit is a control hub for the operation of multiple eDIN modules. It is an advanced network gateway that allows an eDIN system to be controlled and configured remotely through a web browser.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

All eDIN modules must be earthed. Modules contain no user serviceable parts and should not be opened.

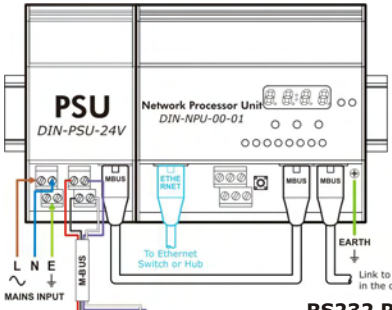
Module Size:	6M, L 106mm x W 100mm x H 64mm
Power Input:	24V DC, 250 mA max. from data bus
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
Network Connection:	Ethernet - 100 Base-T, RJ-45
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN6100-3-2, EN61000-3-3 & EN60669-2-1

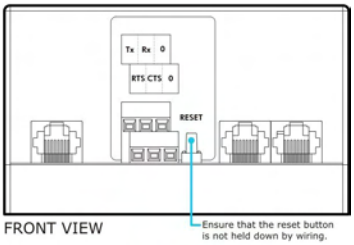
CE

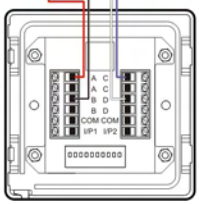
WIRING

IMPORTANT:

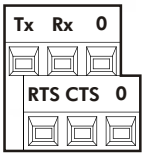
- Mains input to power supply must be protected by a suitably rated MCB.
- Correctly certified cables must be used for all mains and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.







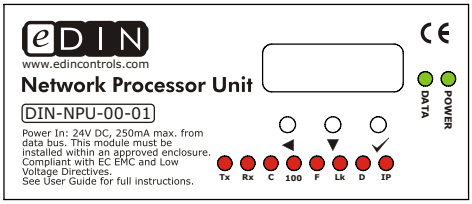
RS232 Port Connection Details



Tx	*Transmit* Data out of the NPU
Rx	*Receive* Data into the NPU
RTS	*Ready to Send* Handshaking output from the NPU
CTS	*Clear to Send* Handshaking output from the NPU
0	*0v / GND Connection*

The **Tx** connection of the NPU should be wired to the **Rx** connection of the device you want to control. Likewise the **Rx** connection of the NPU should be wired to the **Tx** connection of a device which you want to use to send commands to the NPU.

TOP PANEL LED FUNCTIONS

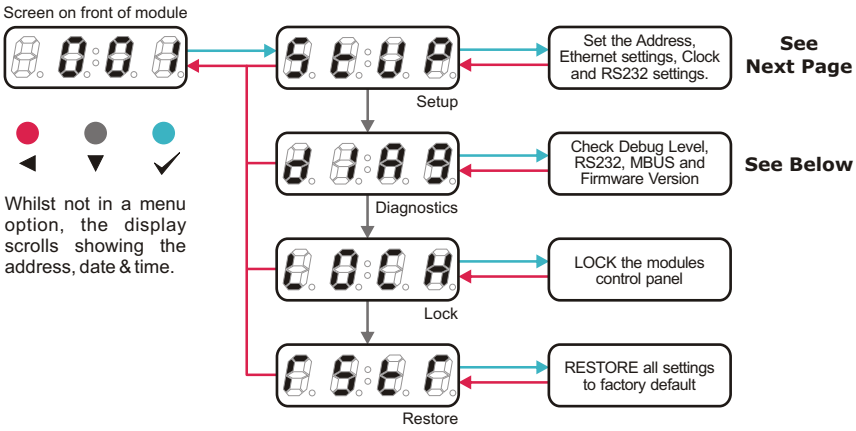

eDIN
www.edincontrols.com
Network Processor Unit
DIN-NPU-00-01
Power In: 24V DC, 250mA max. from data bus. This module must be installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
CE
DATA
POWER
Tx Rx C 100 F Lk D IP

POWER
24v Power from MBUS

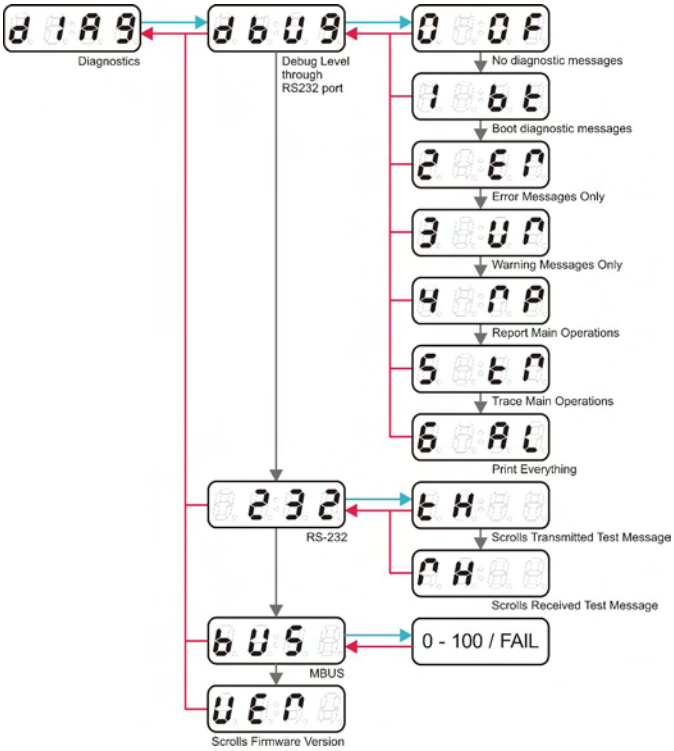
DATA
MBUS message received or transmitted

LED	Communication Port	Meaning
Tx	RS232	Data is being transmitted from the NPU
Rx	RS232	Data is being received by the NPU
C	Ethernet	Collision - If this LED flashes continually then check your network cables and connectors.
100	Ethernet	Unit is operating in 100Mbits mode when illuminated. Unit is operating on 10Mbits mode when not illuminated.
F	Ethernet	Full duplex mode. This LED would normally be on.
Lk	Ethernet	Link - LED flashes whilst a link is being established. Illuminated continually when the physical Ethernet connection is working, flashing off when data is passed.
D	Ethernet	The NPU is configured to use a DHCP server, and is not a fixed IP address.
IP	Ethernet	The NPU has an IP address

ONBOARD MENU STRUCTURE

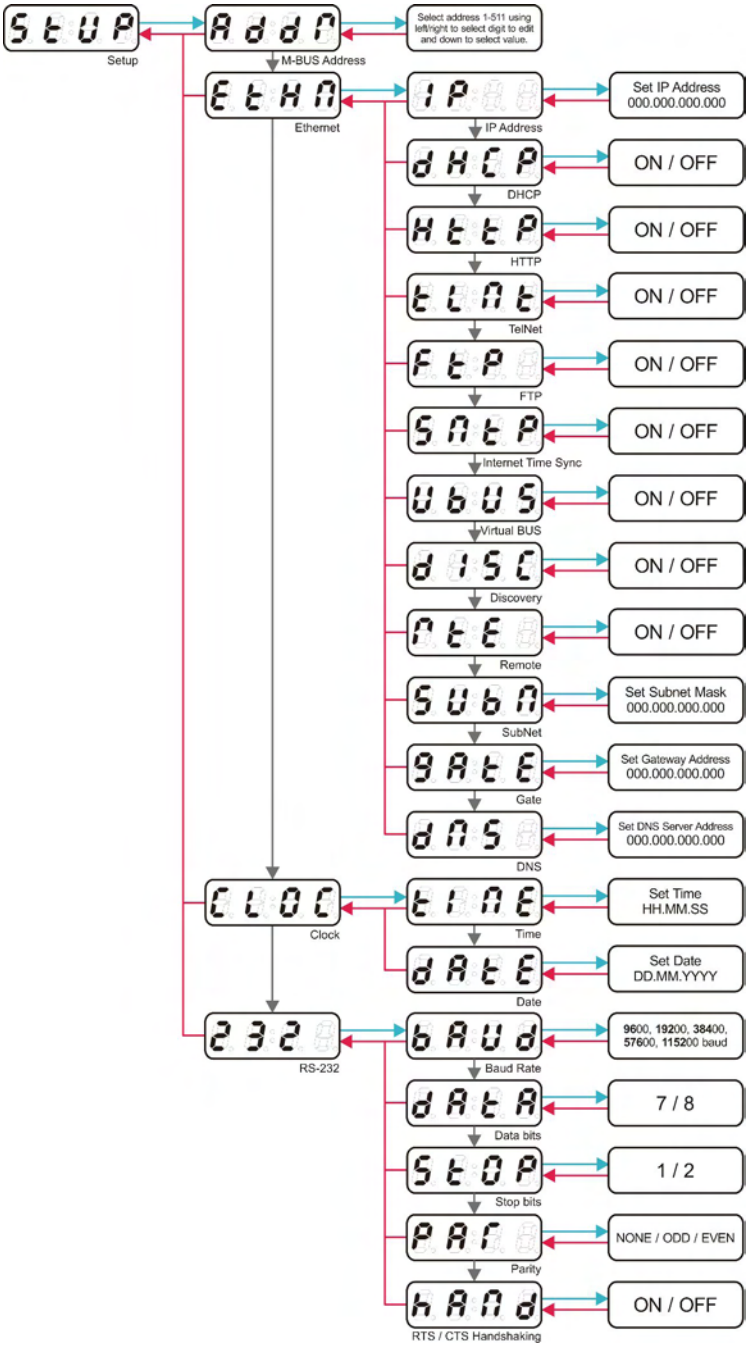

Screen on front of module
Whilst not in a menu option, the display scrolls showing the address, date & time.
Setup
Set the Address, Ethernet settings, Clock and RS232 settings.
See Next Page
Diagnostics
Check Debug Level, RS232, MBUS and Firmware Version
See Below
Lock
LOCK the modules control panel
Restore
RESTORE all settings to factory default

ONBOARD MENU - DIAGNOSTICS

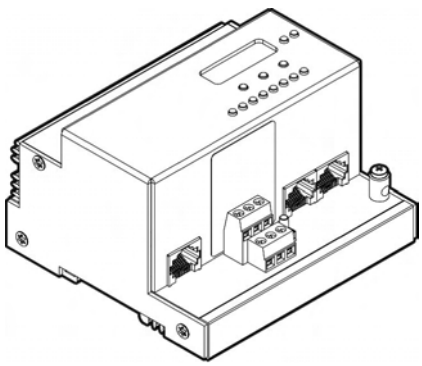


DS208 V1.0 © Mode Lighting 2009

ONBOARD MENU - SETUP



DS208 V1.0 © Mode Lighting 2009



Control4
www.control4.com

The DIN-rail mounting modular lighting control solution from Control4.

CONTENTS:

- Network Processor Unit
- 300mm Data-Bus Link Cable
- User Manual CD-ROM

INSTALLATION GUIDE:

Network Processor Unit C4-DR-NPU-M

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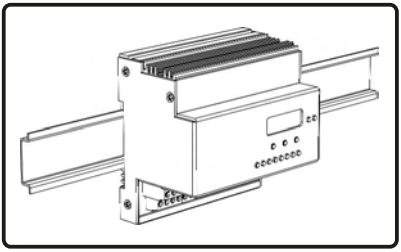
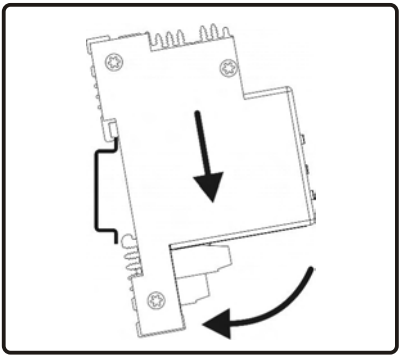
SPECIFICATION & MOUNTING





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Module Size:	6M, L 106mm x W 100mm x H 64mm
Power Input:	24V DC, 250 mA max. from data bus
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
Network Connection:	Ethernet - 100 Base-T, RJ-45
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN6100-3-2, EN61000-3-3 & EN60669-2-1

CE

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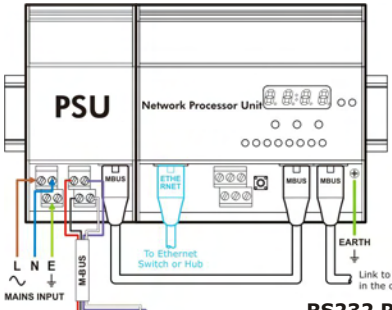
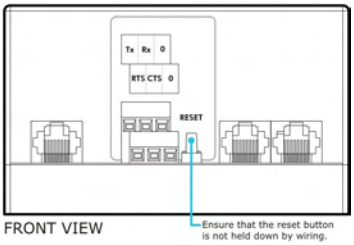
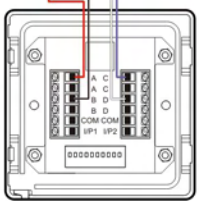
WIRING

IMPORTANT:

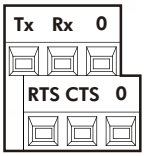
- Mains input to power supply must be protected by a suitably rated MCB.
- Correctly certified cables must be used for all mains and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.







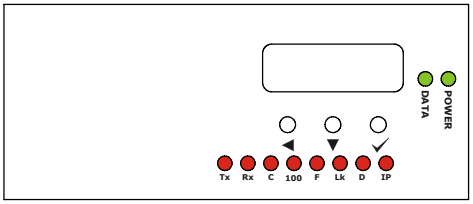
RS232 Port Connection Details



Tx	*Transmit* Data out of the NPU
Rx	*Receive* Data into the NPU
RTS	*Ready to Send* Handshaking output from the NPU
CTS	*Clear to Send* Handshaking output from the NPU
0	*0v / GND Connection*

The **Tx** connection of the NPU should be wired to the **Rx** connection of the device you want to control. Likewise the **Rx** connection of the NPU should be wired to the **Tx** connection of a device which you want to use to send commands to the NPU.

TOP PANEL LED FUNCTIONS

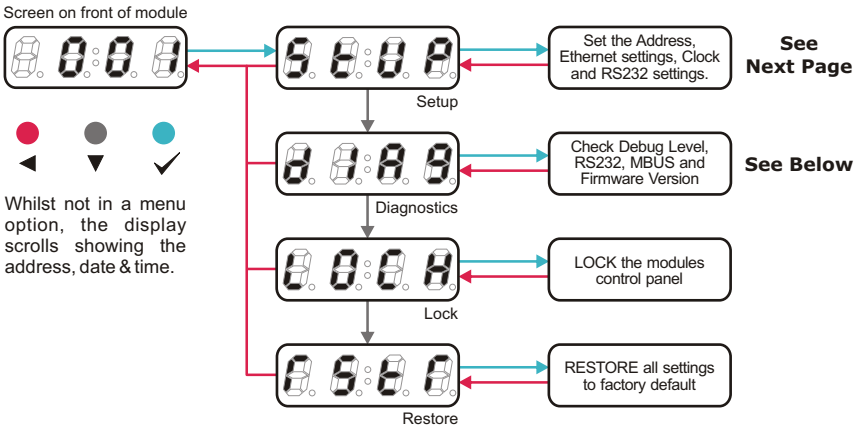


POWER
24v Power from MBUS

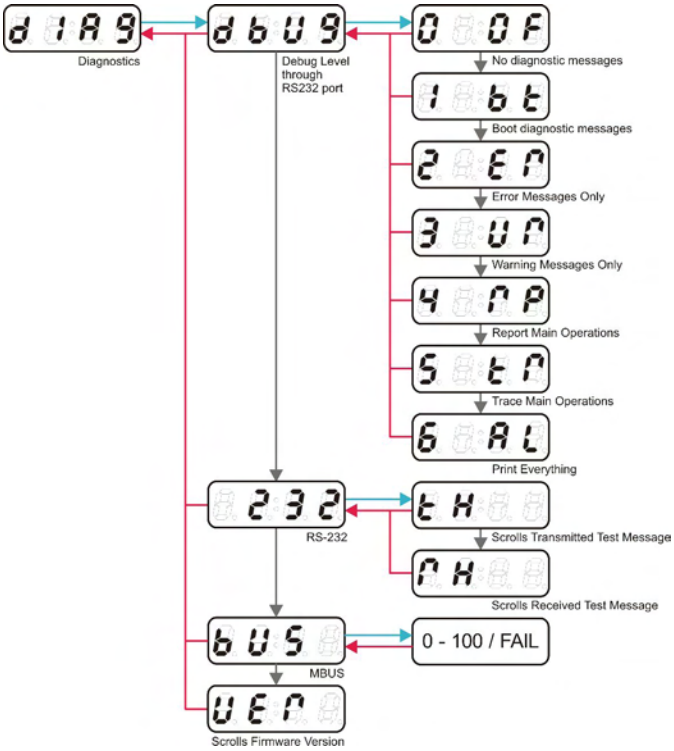
DATA
MBUS message received or transmitted

LED	Communication Port	Meaning
Tx	RS232	Data is being transmitted from the NPU
Rx	RS232	Data is being received by the NPU
C	Ethernet	Collision - If this LED flashes continually then check your network cables and connectors.
100	Ethernet	Unit is operating in 100Mbits mode when illuminated. Unit is operating on 10Mbits mode when not illuminated.
F	Ethernet	Full duplex mode. This LED would normally be on.
Lk	Ethernet	Link - LED flashes whilst a link is being established. Illuminated continually when the physical Ethernet connection is working, flashing off when data is passed.
D	Ethernet	The NPU is configured to use a DHCP server, and is not a fixed IP address.
IP	Ethernet	The NPU has an IP address

ONBOARD MENU STRUCTURE


Screen on front of module
Whilst not in a menu option, the display scrolls showing the address, date & time.
Setup
Set the Address, Ethernet settings, Clock and RS232 settings.
See Next Page
Diagnostics
Check Debug Level, RS232, MBUS and Firmware Version
See Below
Lock
LOCK the modules control panel
Restore
RESTORE all settings to factory default

ONBOARD MENU - DIAGNOSTICS



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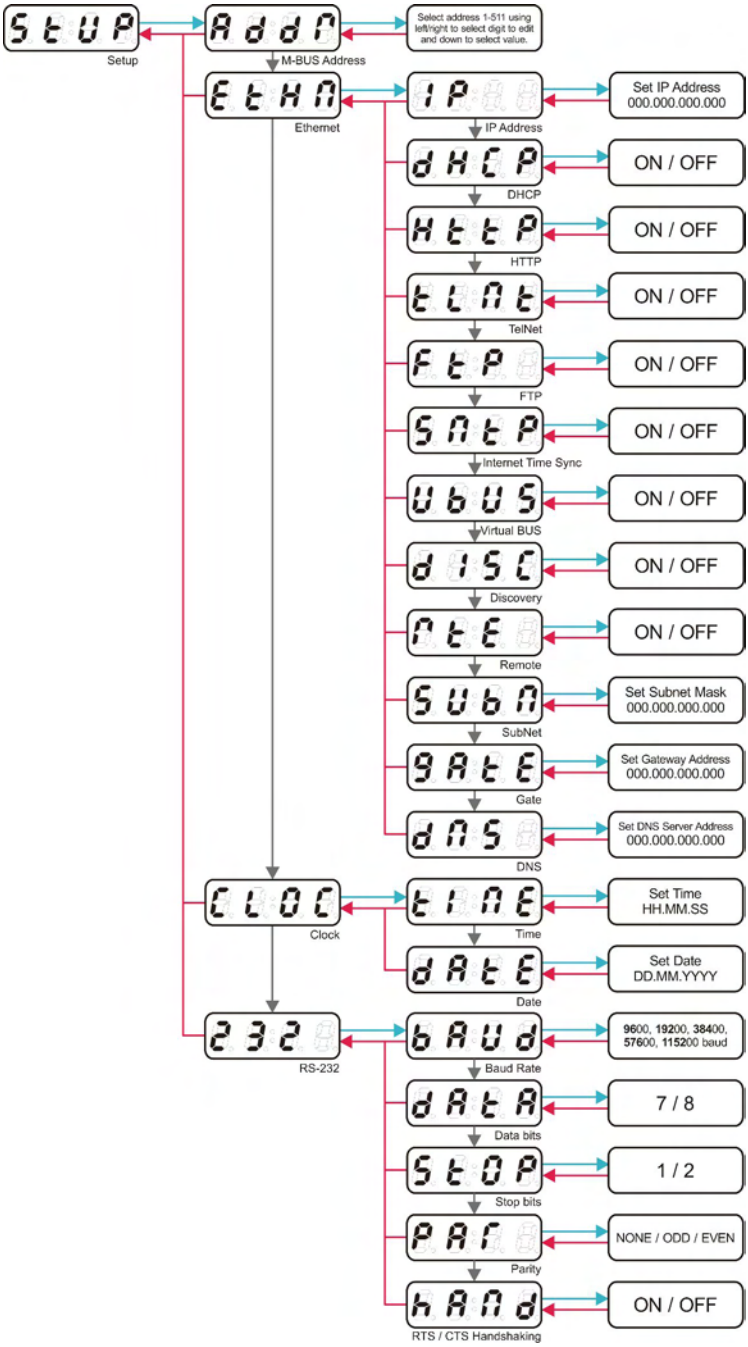
ONBOARD MENU - SETUP



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DIN-PSU-24V SPECIFICATION SHEET

CONTROLLING THE FUTURE OF LIGHTING

Low voltage power supply for use with all eDIN modules for the connection and activation of the M-BUS network.

PRODUCT INFORMATION

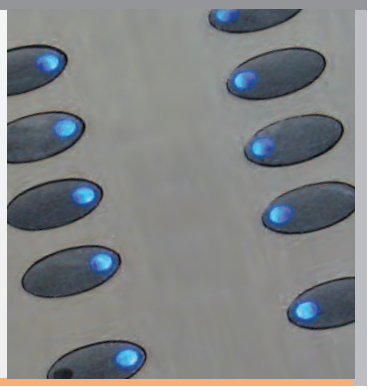
- 1A Power Supply for M-BUS Network
- Compact 3M width DIN Rail Mounting Module
- M-BUS enabled
- Complies with EC EMC and Low Voltage Directives
- CE compliant
- ISO9001 certified design and manufacturing facility

Every eDIN system requires a Power Supply Module. The DIN-PSU-24V outputs up to 1A at 24V to power the M-BUS network and modules. Additional Power Supplies can be added if the required network loading exceeds the 1A limit.

The Power Supply connects to other eDIN modules using plug in RJ45 connector leads. A four way terminal block is included for connection of the M-BUS to remote devices which are connected using a 0.5mm^2 Power & Data cable (EVO-CAB-00-04 or equivalent).

M-BUS CONNECTIVITY

The eDIN Control System from Mode Lighting allows individual modules to be selected to create the desired lighting system. From simple standalone systems for individual rooms to a fully connected and integrated multi-room system, eDIN modules can adapt to suit the project requirements..



MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

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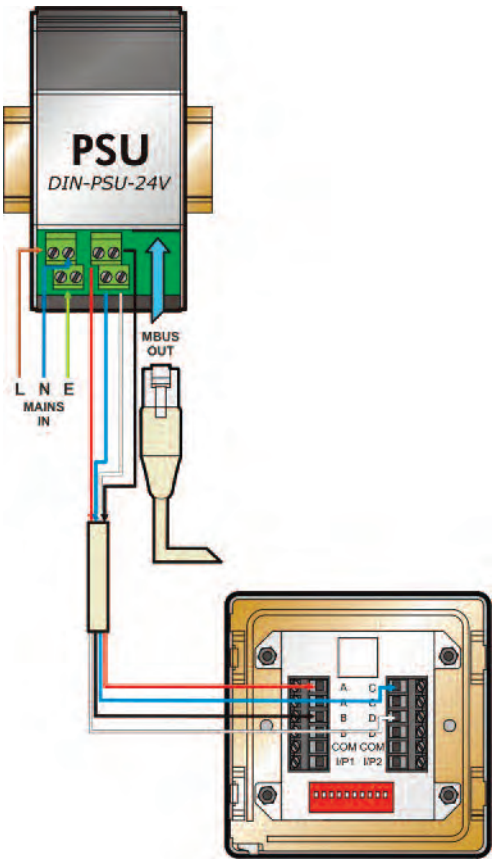
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING



INSTALLATION NOTES

eDIN Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

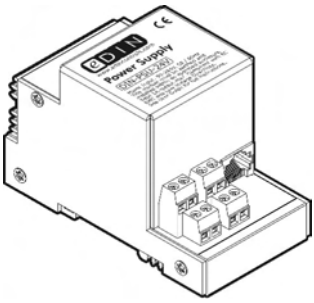
Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

MODEL	Power Supply Unit
Part code	DIN-PSU-24V
DIN Module Size	3M
Dimensions	56mm Wide x 100mm High x 64mm Deep
Weight	0.34kg
Power Input	230 Volt ± 10% 50/.60Hz, single phase
Input Connections	Rising-cage screw terminals. Maximum wire size 1.5mm²
Control Input	Mode M-BUS
M-BUS Connection	1 x RJ-45, 1 x 4-way rising-cage screw terminals. Maximum wire size 1.5mm²
M-BUS Output Current	1A maximum
Outputs	Each eDIN System requires at least one DIN-PSU-24V. If the M-BUS current requirements exceed 1000mA additional DIN-PSU-24V Modules should be used.
Module Loading @ 230V	0.35A maximum
Ambient Temperature	0 - 40ºC
Standards (EC EMC and Low Voltage Directives)	EN55015, EN61547, EN61000-3-2, EN61000-3-3, EN60669-2-1 & EN60950-1

COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and specialist AV installers to ensure the right solution is provided for every individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED assemblies. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

MODE LIGHTING



www.edincontrols.com

The DIN-rail mounting modular lighting control solution from Mode Lighting.

CONTENTS:

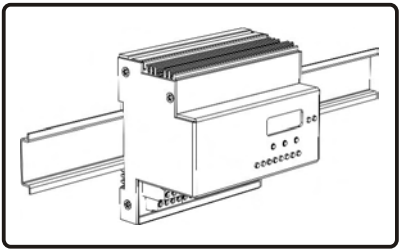
- Power Supply Module
- 300mm Data-Bus Link Cable
- 2 x Termination Plug
- eDIN User Manual (on CD)

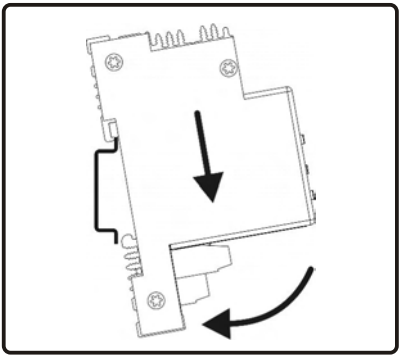
INSTALLATION GUIDE:

Power Supply Module DIN-PSU-24

The Power Supply module is a 3M sized DIN rail mounted low voltage PSU for use with all eDIN modules linked on an M-BUS network.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable Regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

All eDIN modules must be earthed. Modules contain no user serviceable parts and should not be opened.

Module Size:	3M, L 53mm x W 100mm x H 64mm
Mains Input:	90 - 264V, 50/60Hz, 30VA maximum
Output:	24V, 1A Total Maximum
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	1 x RJ-45
Output:	24V, 1A Total Maximum
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LDV) EN55015, EN61547, EN61000-3-2, EN61000-3-3, EN60669-2-1 & EN60950-1

CE

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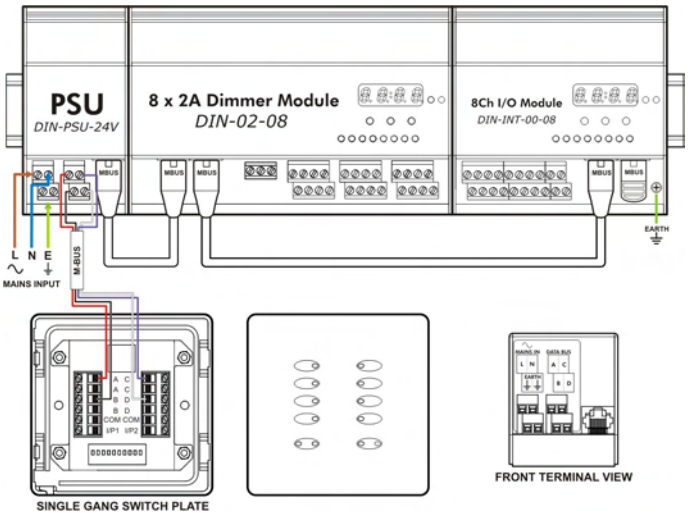
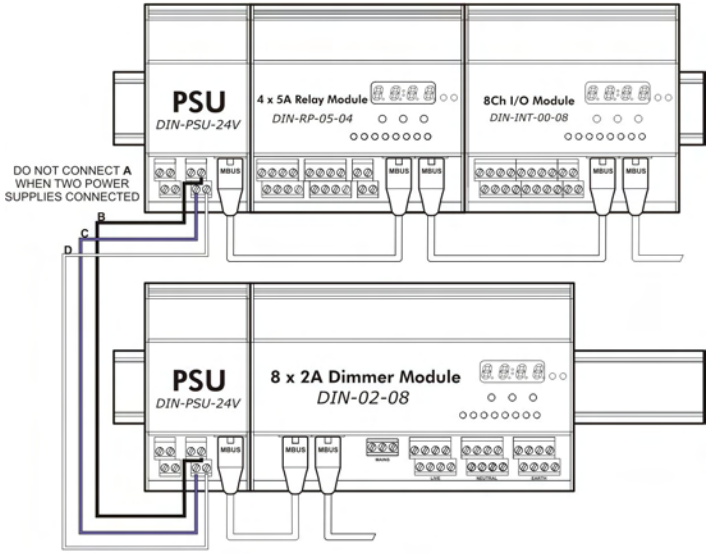
POWER SUPPLY WIRING EXAMPLE

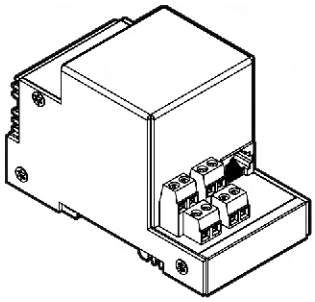


IMPORTANT:

- Mains input to power supply must be protected by suitably rated MCB.
- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.

WIRING TWO POWER SUPPLIES





Control4
www.control4.com

The DIN-rail mounting modular lighting control solution from Control4.

CONTENTS:

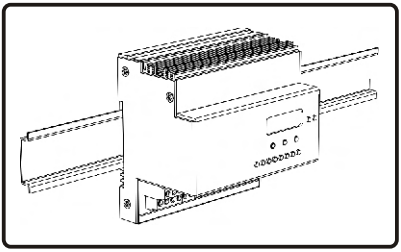
- Power Supply Module
- 300mm Data-Bus Link Cable
- 2 x Termination Plug
- Control4 User Manual (on CD)

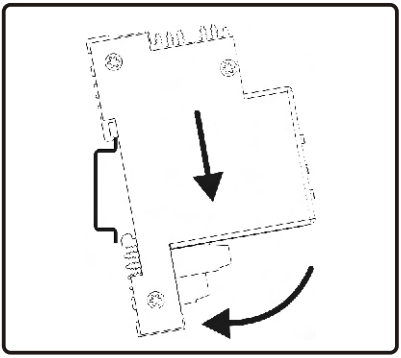
INSTALLATION GUIDE:

Power Supply Module C4-DR-PSU-M

The Power Supply module is a 3M sized DIN rail mounted low voltage PSU for use with all Control4 modules linked on an M-BUS network.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable Regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

Control4 modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

All Control4 modules must be earthed. Modules contain no user serviceable parts and should not be

Module Size:	3M, L 53mm x W 100mm x H 64mm
Mains Input:	90 - 264V, 50/60Hz, 30VA maximum
Output:	24V, 800mA Total Maximum
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	1 x RJ-45
Output:	24V, 1A Total Maximum
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LDV) EN55015, EN61547, EN61000-3-2, EN61000-3-3, EN60669-2-1 & EN60950-1

CE

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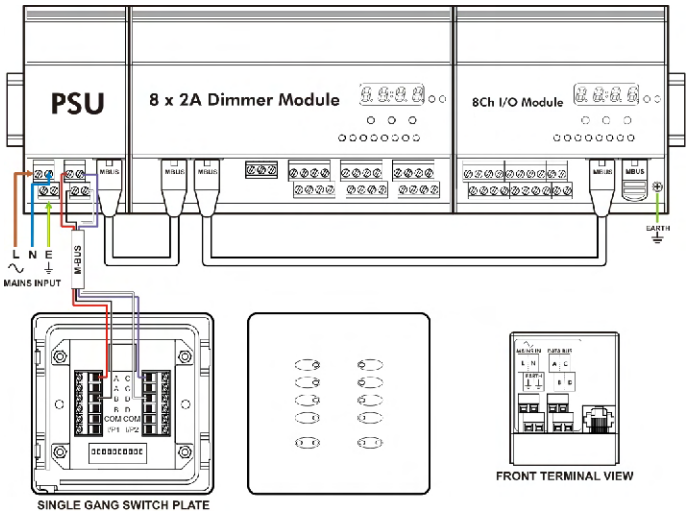
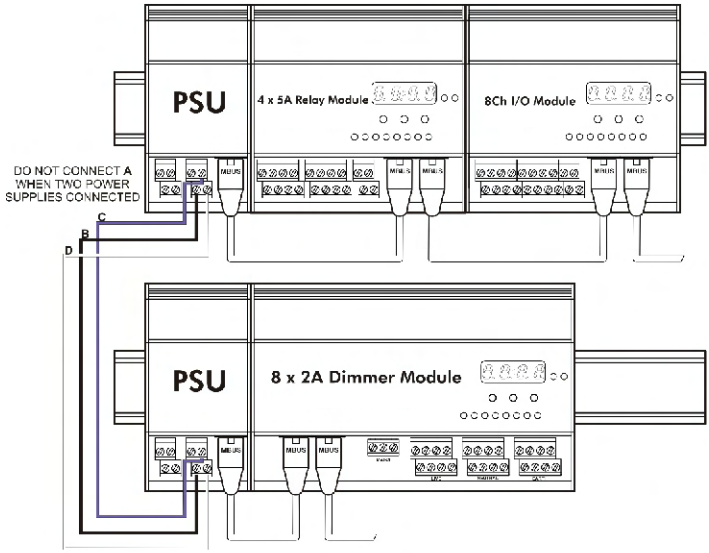
POWER SUPPLY WIRING EXAMPLE



IMPORTANT:

- Mains input to power supply must be protected by suitably rated MCB.
- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.

WIRING TWO POWER SUPPLIES



DIN-RP-05-04 SPECIFICATION SHEET

CONTROLLING THE FUTURE OF LIGHTING

A four output feed through relay module comprising three single pole contacts and a double pole contact output for the control of blinds, screen motors, plasma lifts, water pumps, contactors and switched lighting circuits.

PRODUCT INFORMATION

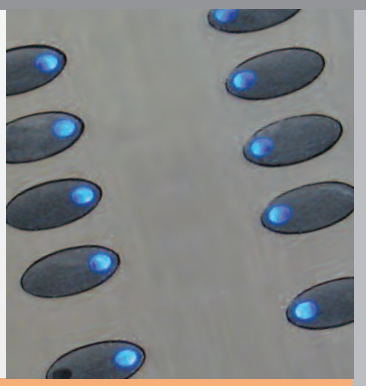
- 3 x Single Pole Contacts
- 1 x Double Pole Contacts
- Compact 6M width DIN Rail Mounting Module
- M-BUS enabled
- Silver-Tin-Oxide Contacts for reliable switching
- Can be installed as part of a 17th Edition Compliant installation
- Clearance for Three Phase Switching.
- Complies with EC EMC and Low Voltage Directives
- CE Compliant
- ISO9001 certified design and manufacturing facility

The eDIN Relay Module Dimmer offers ultimate flexibility in selecting switching formats for various loads. Three single pole changeover contacts allow for simple ON/OFF operation or Start/Stop commands. A Double Pole Changeover Contact is also included to suit certain motor control types that require direction control ensuring that the relay module provides provide flexible, adaptable control for small to medium scale projects.

Basic standalone control using a single keypad provides simple changeover operation of the relay outputs. Use with a configurable I/0 module (DIN-INT-00-08) to control SELV 1-10V, LED drivers. Use with a Universal Ballast Controller module (DIN-UBC-01-05) to control the mains switching for 1-10V, fluorescent ballasts. When used with an eDIN Network Processor Unit full control of each output is available. An on-board menu system provides simple setup of circuit functions, relay test facility.

M-BUS CONNECTIVITY

The DIN-RP-05-04 eDIN Module is M-BUS enabled and can be used with the Evolution control system as a slave relay unit allowing the flexible and compact eDIN Modules to be combined with the highly configurable Evolution System making Mode Lighting products the perfect choice for any scale of project.



MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

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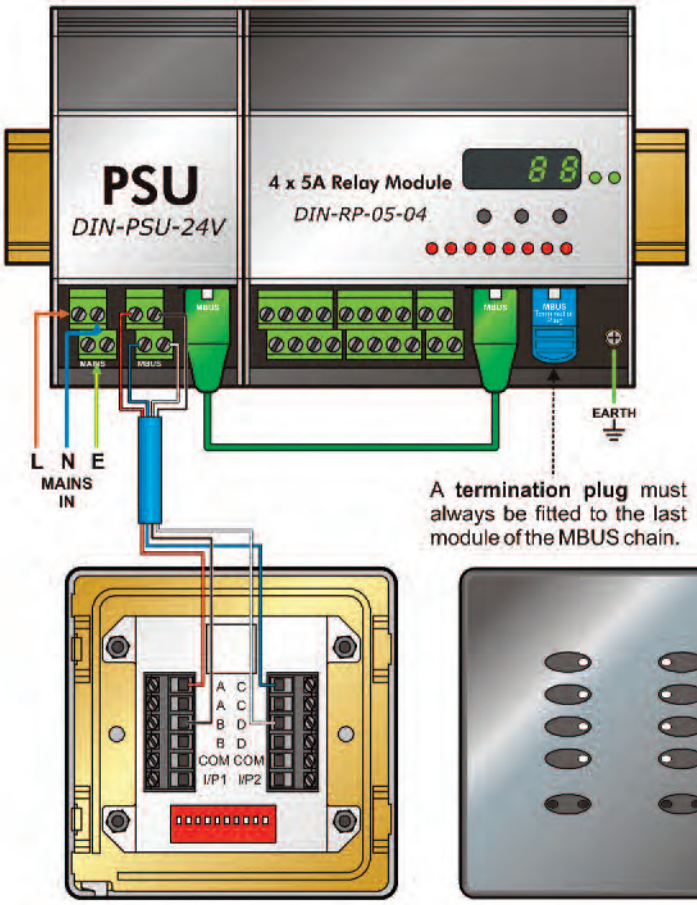
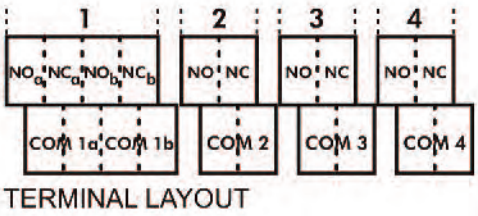
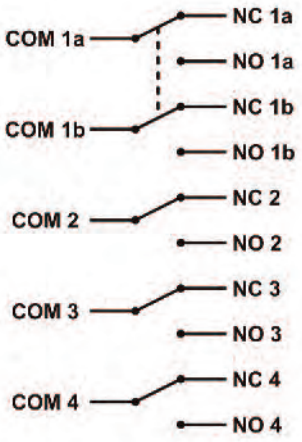
Tel: +44 (0) 1920 462121
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING







INSTALLATION NOTES

eDIN Modules must installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

The eDIN Relay Module employs micro-gap relays for true switched control. Modules utilise a custom metal casing for thermal management and product integrity.

eDIN Relay Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

Compatible load types:- Incandescent, Electronic Convertor, Iron Core, Fluorescent and Motor

Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

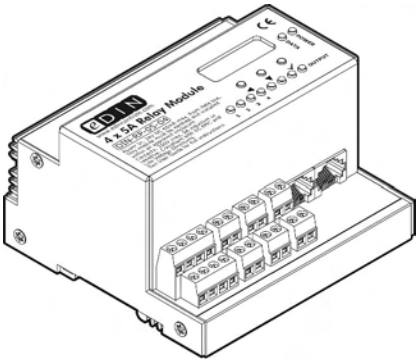
MODEL	4 x 5A Feed Through Relay Module
Part code	DIN-RP-05-04
DIN Module Size	6M
Dimensions	104mm Wide x 100mm High x 64mm Deep
Weight	0.43kg
Input Voltage	24V DC Supplied through M-BUS Connection
Input Connections	M-BUS Connection
Control Input	Mode M-BUS
M-BUS Connection	2 x RJ-45 (in and out)
M-BUS Current Consumption	80 mA
Outputs	1 x DPCO / 3 x SPCO. Max. wire size 1.5mm²
Output Control Type	Switching only - Volt Free Contact Closures
Channel loading	5A resistive, 2A inductive load per relay (feed-through)
Module Loading @ 230V	20A maximum
Ambient Temperature	0 - 40°C
Standards (EC EMC and Low Voltage Directives)	EN55015, EN61547, EN61000-3-2, EN61000-3-3 and EN60669-2-1

COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and specialist AV installers to ensure the right solution is provided for every individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED assemblies. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

DS000 - V1

MODE LIGHTING



eDIN

www.edincontrols.com

The DIN-rail mounting modular lighting control solution from Mode Lighting.

CONTENTS:

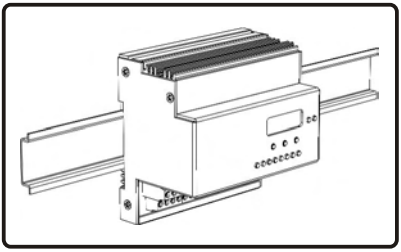
- 4 x 5A Relay Module
- 300mm Data-Bus Link Cable

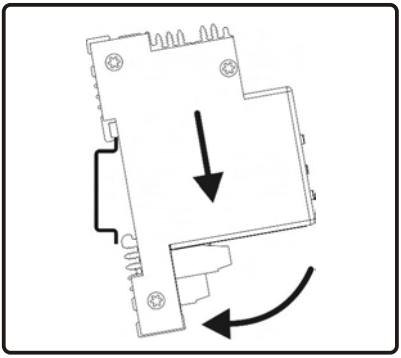
INSTALLATION GUIDE:

4 x 5A Relay Module DIN-RP-05-04

The 4 x 5A Relay module is a 6M sized, four channel relay unit suitable for inductive or resistive loads of up to 20A total.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

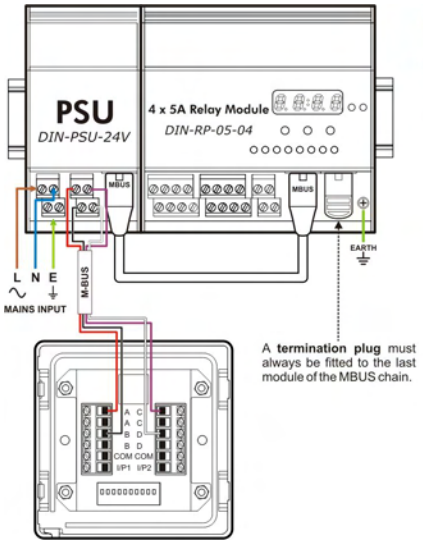
All eDIN modules must be earthed. Modules contain no user serviceable parts and should not be opened.

Module Size:	6M, L 106mm x W 100mm x H 64mm
Power Input:	24V, 80 mA max. from data bus
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
ta Max:	40°C
tc Max:	60°C
Contacts:	At 250V max. 5A resistive or 2A inductive.
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

μ Micro-Gap Construction

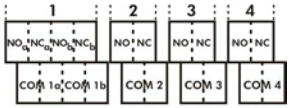
DS206 V1.0 © Mode Lighting 2009

WIRING

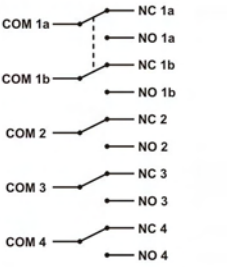


IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply and relays must be protected by a suitably rated MCB.



TERMINAL LAYOUT



- In order to test an eDIN system once it has been wired together, follow the shaded instructions on the back page.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes using a 10-button single gang Evolution switch plate.
Note: The address of the plate must be set to the same address as the dimmer module.

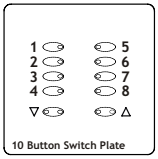
1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following two functions (A & B) can now be programmed in either order. These are **optional** features and if the settings are not edited then default functions are used. Please also note that a relay module can be programmed in this way **at the same** time as a dimmer module is being programmed.



10 Button Switch Plate

2

A. Set Channels ON / OFF

To set a channel on or off, press and hold the desired channel button (1-8) and use the Δ and ∇ buttons to set ON and OFF.

B. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

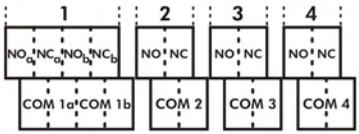
Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.
On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

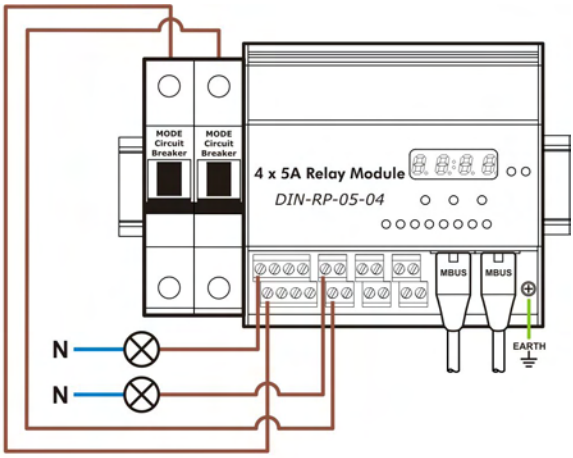
SWITCHED LOAD EXAMPLE WIRING

with circuit protection

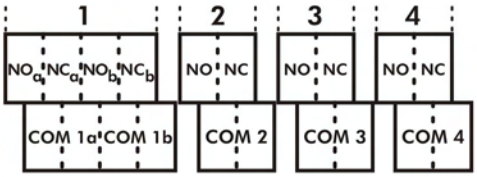
- **IMPORTANT:** Mains input to relays must be protected by suitably rated MCBs.



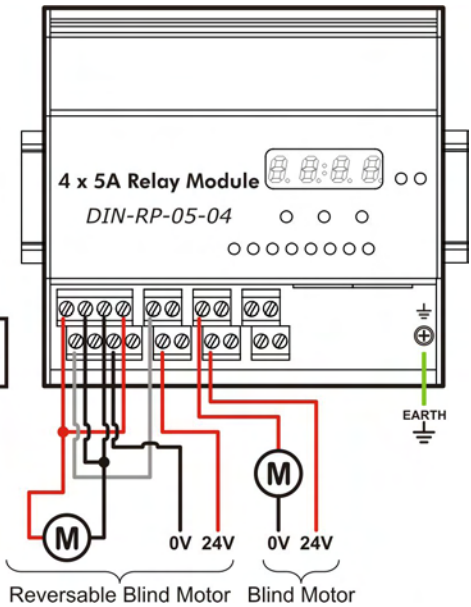
TERMINAL LAYOUT



MOTOR EXAMPLE WIRING



TERMINAL LAYOUT



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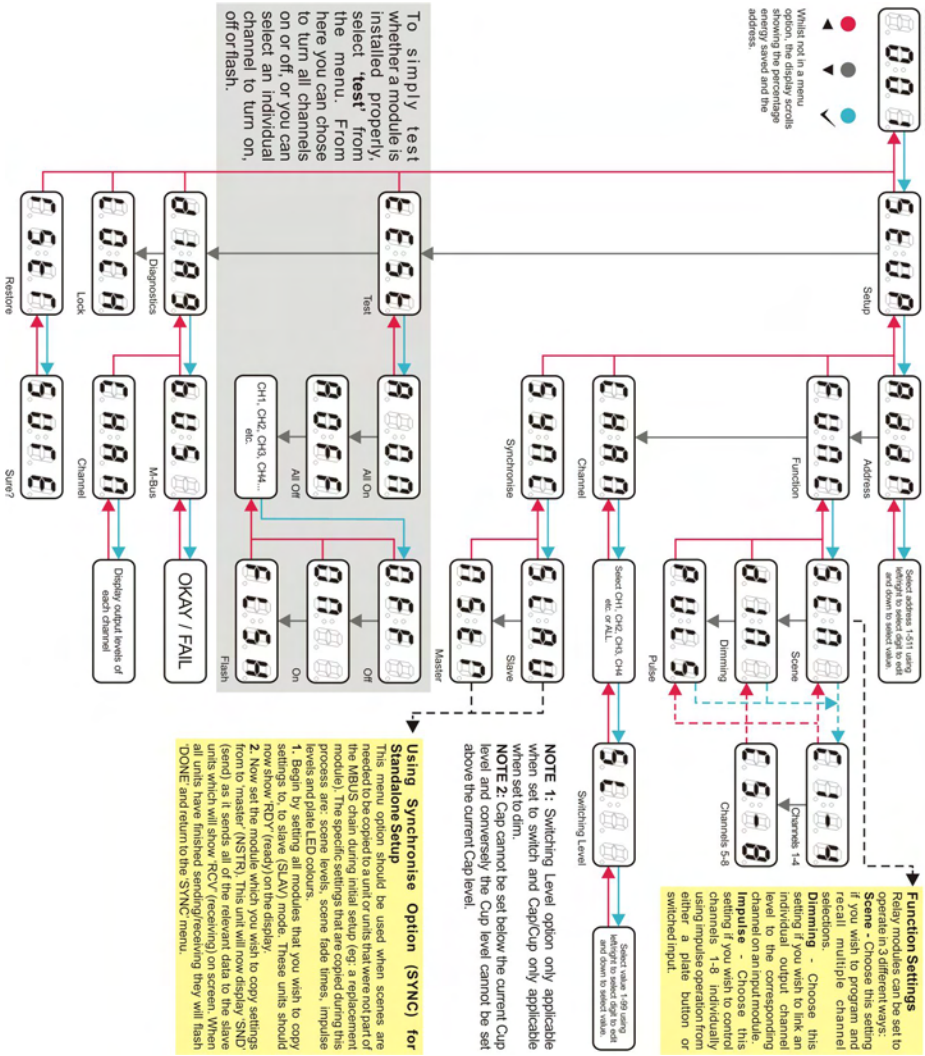
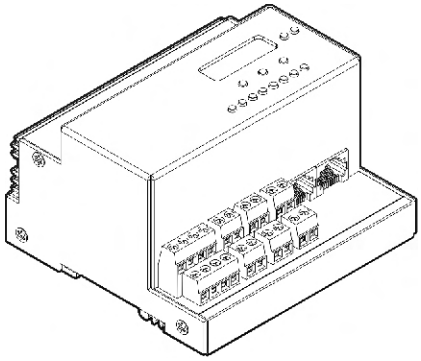
SETUP USING ONBOARD MENU

The on-board menu on all the eDIN modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding an eDIN Network Processor Unit to your setup will allow you to configure your system using eDIN software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst not in a menu option, the display scrolls showing the percentage energy saved and the address.
Setup
Address
Select address 1-511 using left/right to select digit to edit and down to select value.
Function
Scene
Dimming
Pulse
Channels 1-4
Channels 5-8
Function Settings
Relay modules can be set to operate in 3 different ways:
Scene - Choose this setting if you wish to program and recall multiple channel selections.
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or switched input.
Channel
Select CH1, CH2, CH3, CH4 etc. or ALL
Switching Level
Select value 1-99 using left/right to select digit to edit and down to select value.
NOTE 1: Switching Level option only applicable when set to switch and Cap/Cup only applicable when set to dim.
NOTE 2: Cap cannot be set below the current Cup level and conversely the Cup level cannot be set above the current Cap level.
Synchronise
Slave
Master
Using Synchronise Option (SYNC) for Standalone Setup
This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show RDY (ready) on the display.
2. Now set the module which you wish to copy settings from to 'master' (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.
Test
All On
All Off
CH1, CH2, CH3, CH4... etc.
Off
On
Flash
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Diagnostics
M-Bus
OKAY / FAIL
Lock
Channel
Display output levels of each channel
Restore
Sure?



Control4
www.control4.com

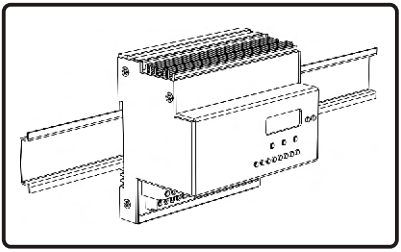
The DIN-rail mounting modular lighting control solution from Control4.

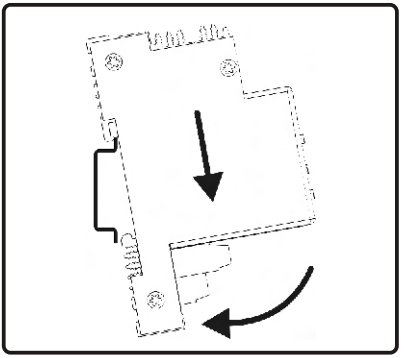
CONTENTS:
- 4 x 5A Relay Module
- 300mm Data-Bus Link Cable

INSTALLATION GUIDE:
4 x 5A Relay Module C4-DR-RM4-M

The 4 x 5A Relay module is a 6M sized, four channel relay unit suitable for inductive or resistive loads of up to 20A total.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

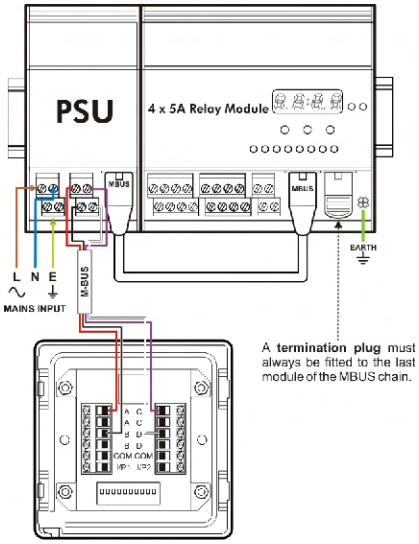
Control4 modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

All Control4 modules must be earthed. Modules contain no user serviceable parts and should not be opened.

Module Size:	6M, L 106mm x W 100mm x H 64mm
Power Input:	24V, 80 mA max. from data bus
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
ta Max:	40°C
tc Max:	60°C
Contacts:	At 250V max. 5A resistive or 2A inductive (AC-15) load per relay. Max. Inrush Current = 60A.
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1

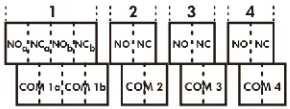
μ Micro-Gap Construction

WIRING

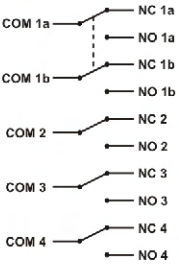


IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to power supply and relays must be protected by a suitably rated MCB.



TERMINAL LAYOUT



- In order to test a Control4 system once it has been wired together, follow the shaded instructions on the back page.

STANDALONE MODE PROGRAMMING

This is a set of instructions for programming scenes using a 10-button single gang Evolution switch plate.
Note: The address of the plate must be set to the same address as the dimmer module.

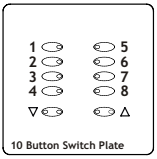
1

To begin programming scenes:

Hold down the scene button (1-8) for **5** secs for the scene that you wish to edit.

The LED for the selected scene will now flash **blue** (channels that are included in the scene are illuminated **green** and excluded channels are illuminated **red**).

The following two functions (A & B) can now be programmed in either order. These are **optional** features and if the settings are not edited then default functions are used. Please also note that a relay module can be programmed in this way **at the same** time as a dimmer module is being programmed.



2

A. Set Channels ON / OFF

To set a channel on or off, press and hold the desired channel button (1-8) and use the Δ and ∇ buttons to set ON and OFF.

B. Include / Exclude Channels

To **include / exclude** a channel, hold the required channel button (1-8) and then press Δ to **include** the channel or ∇ to **exclude** the channel.

Channels that are included in the scene will be illuminated green and channels that are excluded will be lit red. Channels which are excluded from a scene will not change brightness when the scene is selected.

3

To **exit** programming mode, hold down the flashing blue scene button for five seconds. Alternatively, to begin editing another scene, hold down the button for the new scene for five seconds and begin editing options A, B, C & D as above (return to stage two).

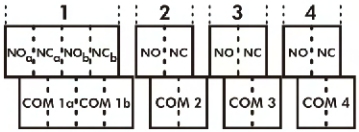
Other Plate Functions

Master Plate - Setting a plate's address to 511 sets it as a 'master' which will control all modules on any address.
On / Off Switch - There are two sets of contact input terminals on the rear of the plate. A contact closure on Input 1 has the same effect as pressing the ∇ button. A contact closure on Input 2 has the same effect as pressing the Δ button. These inputs could also be used on a plate set to address 511 to facilitate an 'all on' and an 'all off' function.

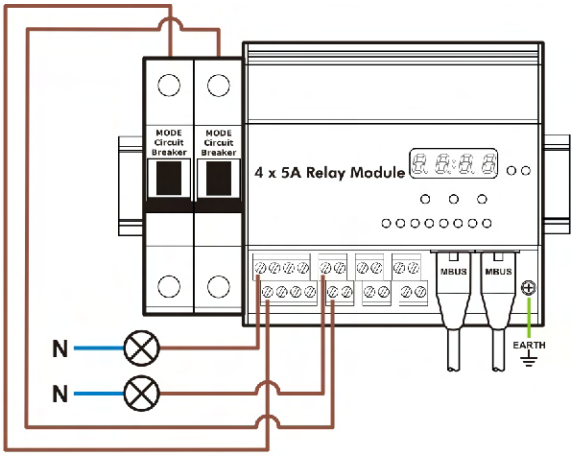
SWITCHED LOAD EXAMPLE WIRING

with circuit protection

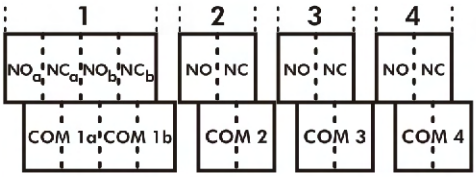
- **IMPORTANT:** Mains input to relays must be protected by suitably rated MCBs.



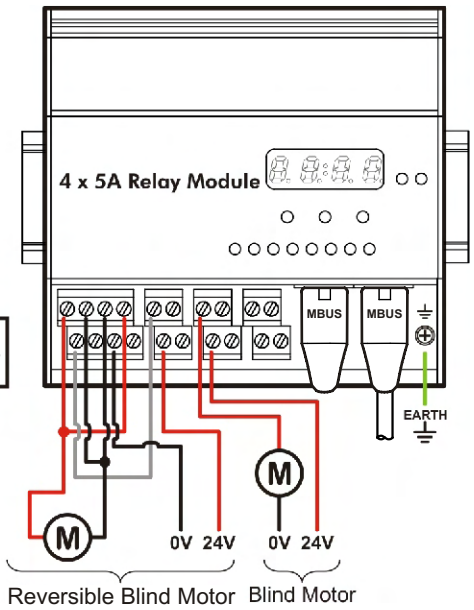
TERMINAL LAYOUT



MOTOR EXAMPLE WIRING



TERMINAL LAYOUT



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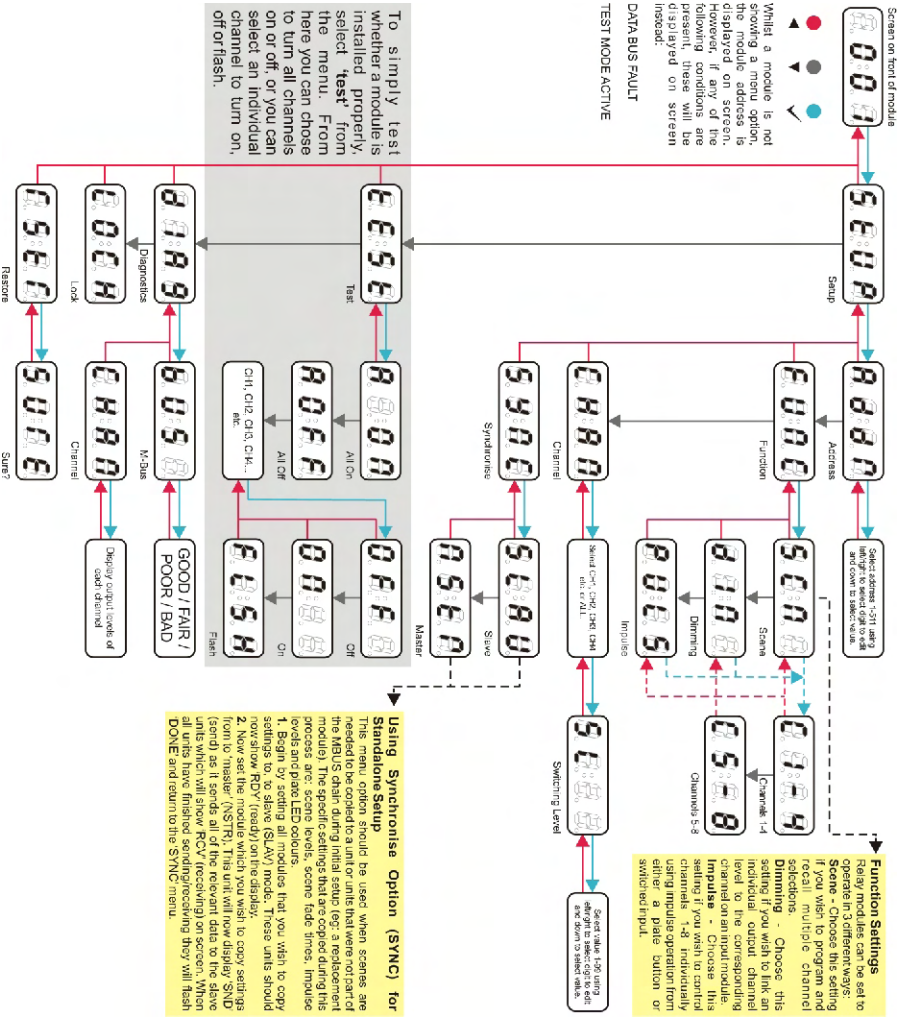
SETUP USING ONBOARD MENU

The on-board menu on all the Control4 modules is used to setup a device for use in **standalone** mode. Channel settings can be adjusted using this menu or by using a switch plate (as per earlier instructions). Alternatively, adding a Control4 Network Processor Unit to your setup will allow you to configure your system using Control4 software, operated using a web browser via an ethernet connection.


Screen on front of module
Whilst a module is not showing a menu option, the module address is displayed on screen. However if any of the following conditions are present, these will be displayed on screen instead:
DATA BUS FAULT
TEST MODE ACTIVE
Setup
Address
Select address 1-511 using left/right to select digit to edit and Cont to select value.
Function
Scene
Dimming
Impulse
Switching Level
Channels 1-4
Channels 5-8
Channel
Synchronise
Master
Slave
Test
All On
All Off
Ch1, Ch2, Ch3, Ch4, etc
On
Off
Flash
Diagnostics
Lock
M-Bus
Restore
Sure?
GOOD / FAIR / POOR / BAD
Display output levels of each channel
To simply test whether a module is installed properly, select 'test' from the menu. From here you can chose to turn all channels on or off, or you can select an individual channel to turn on, off or flash.
Function Settings
Relay modules can be set to operate in 3 different ways:
Scene - Choose this setting if you wish to program and recall multiple channel selections.
Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.
Impulse - Choose this setting if you wish to control channels 1-4 individually using impulse operation from either a plate button or switched input.
Using Synchronise Option (SYNC) for Standalone Setup
This option should be used when scenes are needed to be copied to unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and panel LED colours.
1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show RDY (ready) on the display.
2. Now set the module which you wish to copy settings from to 'master' (MSTR). This unit will now display SND (send) as it sends all of the relevant data to the slave units which will show RCV (receiving) on screen. When all units have finished sending/receiving they will flash DONE and return to the SYNC menu.

CONTROLLING THE FUTURE OF LIGHTING

DIN-UBC-01-05 SPECIFICATION SHEET

A multi function control module designed for control of any DALI, DSI or 1-10v controlled device.

The eDIN Universal Ballast Control Module has been designed to simplify the implementation and operation of DALI fittings with a built-in DALI power supply and onboard DALI setup. The additional configurable terminals make the unit highly flexible and very cost effective for small standalone systems or as part of larger, fully integrated, lighting management and control system.

PRODUCT INFORMATION

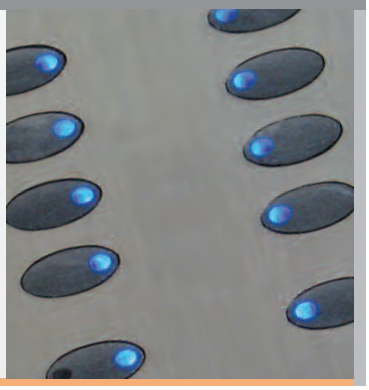
- Compact 6M wide DIN rail mounting module
- DALI output with built-in DALI power supply (no additional supply required)
- DALI Broadcast, group and channel capabilities
- Four separate configurable ports for 1-10v DSI output or contact inputs
- M-BUS enabled
- Can be installed as part of a 17th Edition compliant installation
- Complies with EC EMC and Low Voltage Directives
- CE compliant
- ISO9001 certified design and manufacturing facility

The Digital Addressable Lighting Interface has been introduced to standardise and simplify the specification, installation and control of lighting loads. One of the advantages of DALI is the ability to connect multiple light fittings with a single power and data connection yet still have individual control.

This usually requires some form of specialist programming tools to locate and identify the individual DALI devices. eDIN simplifies this by using a simple onboard menu to locate and identify fittings which speeds up the programming process and makes DALI devices practical to use on any size of project.

M-BUS CONNECTIVITY

All eDIN Modules are M-BUS enabled and can be used with other Mode Lighting systems. The universal ballast control module can be used to provide DALI or additional 1-10V / DSI outputs or contact inputs to an Evolution System allowing increased flexibility when specifying larger control systems.



MODE LIGHTING

CONTROLLING THE FUTURE OF LIGHTING

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United Kingdom.
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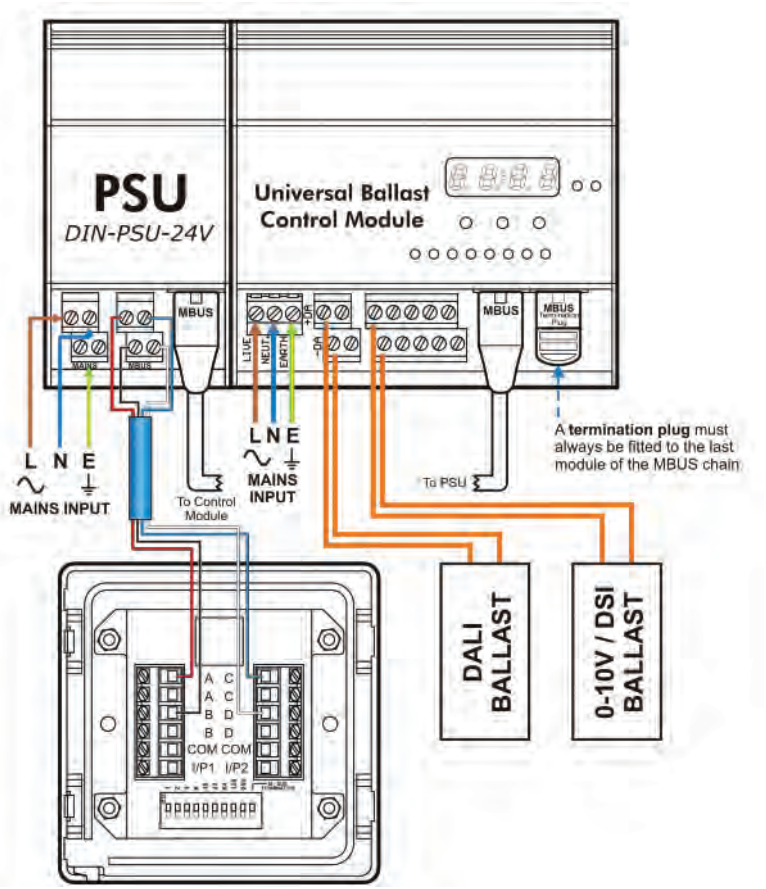
Fax: +44 (0) 1920 466881
email: sales@modelighting.com
www.modelighting.com

MODULE WIRING



INSTALLATION NOTES

eDIN Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with the National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN Modules must be earthed.

Modules contain no user servicable parts and should not be opened.

Compatible Load Types
DALI compatible ballasts and drivers
1-10V controlled devices
DSI controlled devices

Please see the eDIN installation manual for further details and examples of standalone operation or visit www.edincontrols.com

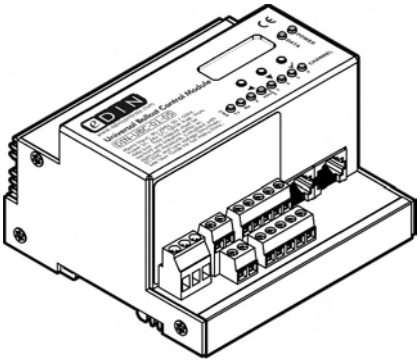
MODEL	Universal Ballast Control Module
Part code	DIN-UBC-01-05
DIN Module Size	6M
Dimensions	104mm Wide x 100mm High x 64mm Deep
Weight	0.35kg
Input Voltage	24V DC Supplied through M-BUS Connection
Input Connections	M-Bus Connection
Control Input	Mode M-BUS
M-BUS Connection	2 x RJ-45 (in and out)
M-BUS Current Consumption	50 mA
Control Inputs	0/1-10V input or contact-closure input (configurable as normally open or normally closed
Control Outputs	0/1-10V output or DSI output (configurable)
Channel loading (input)	2mA per channel maximum
Channel loading (output)	100mA per channel maximum
Ambient Temperature	0 - 40°C
Standards (CE, EMC)	EN55015, EN61547, EN61000-3-2, EN61000-3-3 and EN60669-2-1

COMPANY BACKGROUND

Mode Lighting work closely with Lighting Designers, M & E Consultants, Architects, Quantity Surveyors, Developers, Electrical Contractors and AV Specialist installers to ensure the right solution is provided for each individual project. Products designed and manufactured by Mode Lighting include control systems, electronic transformers and LED production facilities. Nearly 40 years of experience in these areas has lead to the creation of a worldwide network of satellite offices, distributors and dealers to provide local sales and technical support to clients on Mode products.

DS213 - V1.2

MODE LIGHTING



eDIN

www.edincontrols.com

The DIN-rail mounting modular lighting control solution from Mode Lighting.

CONTENTS:

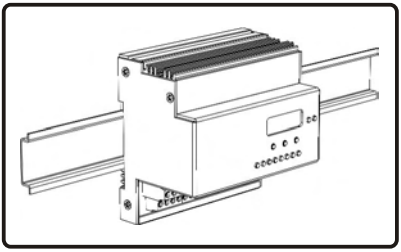
- Universal Ballast Control Module
- 300mm Data-Bus Link Cable

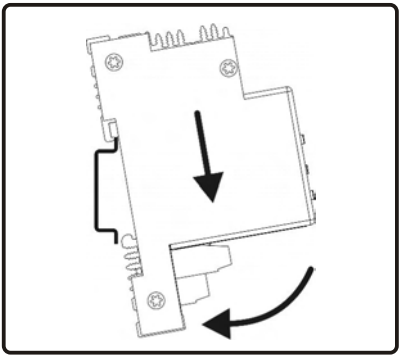
INSTALLATION GUIDE:

Universal Ballast Control Module DIN-UBC-01-05

The Universal Ballast Control module is a 6M sized DIN rail mounted unit which can be configured to accept up to 4 channels of 0-10V, 1-10V, DSI or switched contact inputs or to provide up to 4 channels of fully isolated 0-10V, 1-10V or DSI outputs as well as a single DALI universe.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

eDIN modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

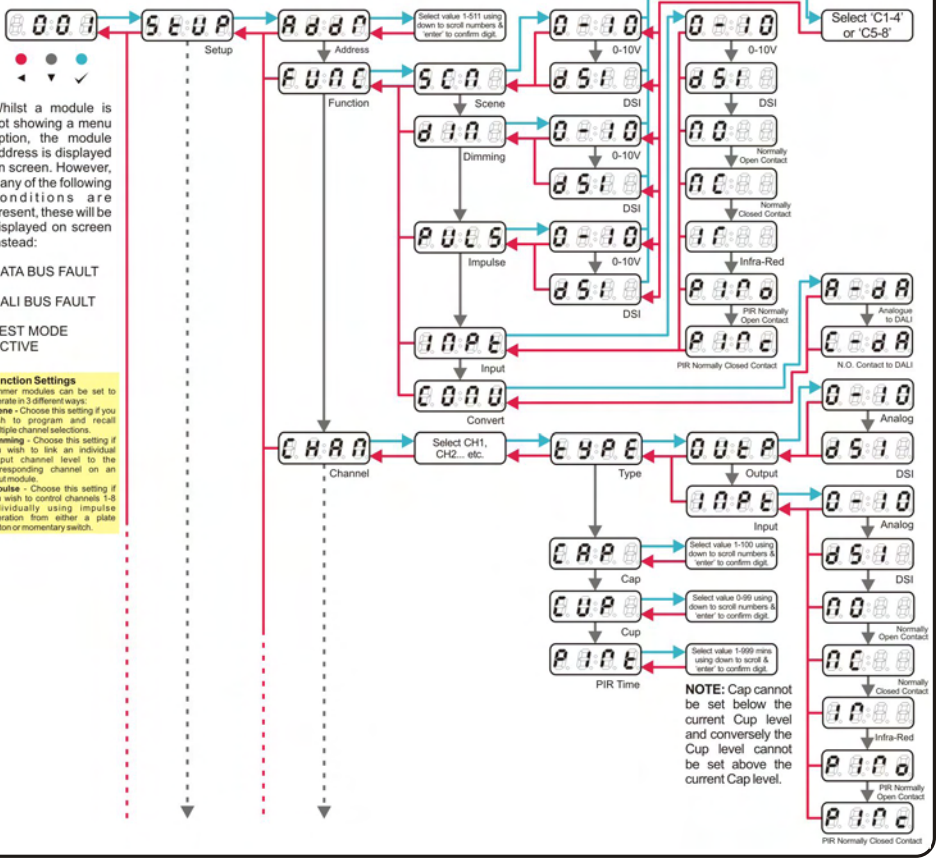
All eDIN modules must be earthed. Modules contain no user serviceable parts and should not be opened.

Module Size:	6M, L 106mm x W 100mm x H 64mm
Mains Input:	90-264V, 50 / 60Hz
Power Input:	24V, 50mA nominal
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1
0-10V / 1-10V / DSI Outputs:	100mA each max.
Max. # DALI Ballasts:	64
DALI PSU:	250 mA

CE

DS213 V1.1 © Mode Lighting 2010

ONBOARD SET-UP: I/O SETTINGS



Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:

DATA BUS FAULT

DALI BUS FAULT

TEST MODE ACTIVE

Function Settings

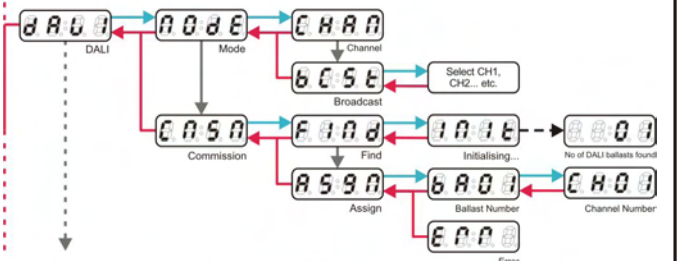
Dimmer modules can be set to operate in 3 different ways:

Scene - Choose this setting if you wish to program and recall multiple channel selections.

Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.

Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.

DALI OPERATING MODES



- The module can control DALI ballasts in one of two modes. The operating mode 'CHAN' (channel mode) or 'BCST' (broadcast mode) is selected from the SETUP-DALI-MODE menu.
- In 'Broadcast' mode, the current level of one eDIN channel is broadcast to all of the DALI ballasts that are connected. When broadcast mode is selected, a sub menu appears from which the user selects which eDIN channel to broadcast (CH1 to CH8).
- In 'Channel' mode, every ballast is allocated to an eDIN channel and individually controlled as per other eDIN output modules. In this mode, the ballasts need to be commissioned. The procedure for this is outlined on the following page (in 'Broadcast' mode, no commissioning is required).

DALI BALLAST COMMISSIONING

DALI ballast commissioning is only required for modules running in 'channel' operation, it is not required for modules running in 'broadcast' mode. Commissioning of the DALI ballasts running in stand-alone mode (ie: without a Network Processor Unit) is carried out using two simple steps: The first step is to 'find' all of the ballasts connected to the ballast control module and the second step is to assign each ballast to an eDIN channel.

- **Step 1 :** Find Ballasts

From the SETUP-DALI-CMSN menu, select 'FIND'. 'INIT' will then be displayed, the display will 'ripple' and all of the ballasts connected to the UBC module will extinguish their lamps.

The display on the UBC will then display ' xx' where xx is the number of ballasts found so far. As each ballast is found, its lamp will dim to approx 50% and the display of the number of ballasts found will increment. It will take a few seconds to find each ballast.

When all the ballasts are found, the display will stop 'rippling' and 'FDxx' will be displayed, where xx is the total number of ballasts found. Once all the ballasts are found, press the ✓ (select) button where you will be returned to the DALI-CMSN menu. Proceed to step 2.

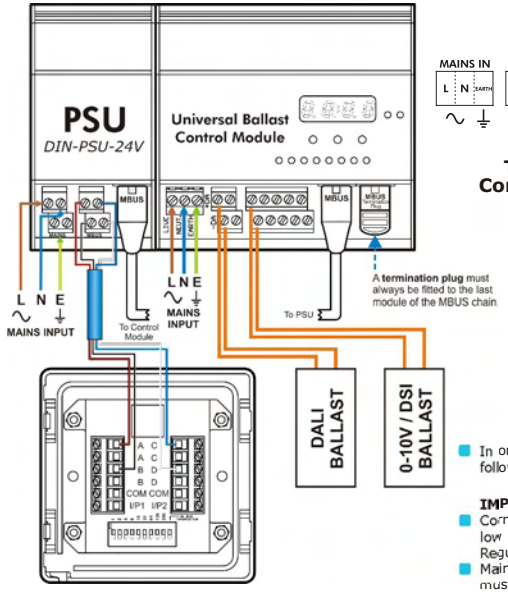
- **Step 2 :** Allocate each ballast to an eDIN channel

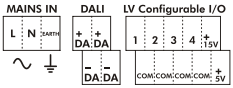
From the SETUP-DALI-CMSN menu, select 'ASGN'. 'BAxx' will then be displayed, where xx is the current ballast number to assign. All of the lamps connected to the ballasts will be extinguished except the currently selected ballast which will be dimmed to 50%.
The scroll '▾' button can then be used to select the ballast to assign. When the button is pressed, the ballast number is incremented (up to the total number of ballasts found in step 1, where it will reset to 1).

Once the ballast to be assigned is found, press the '✓' button. The display will then change to show 'CHxx' where xx is the eDIN channel that that ballast should be controlled by (If it has not been previously set, it will be 0). The '▾' button can then be used to change the channel assignment (between 1 and 8). Once the desired channel is displayed, the '✓' button should be pressed to store the assignment.

The display will then show 'DONE' and the user is returned to the ballast selection so that the next ballast can be assigned. Please note that DALI MODE must be set to 'CHAN' before using.

WIRING





Terminal Configuration

SUPPORTED CONTROL TYPES

Protocol	Input	Output
0-10V	✓	✓
1-10V	✓	✓
DSI	✓	✓
DMX	✗	✗
Volt-Free Contact	✓	○
Infrared	◆	✗

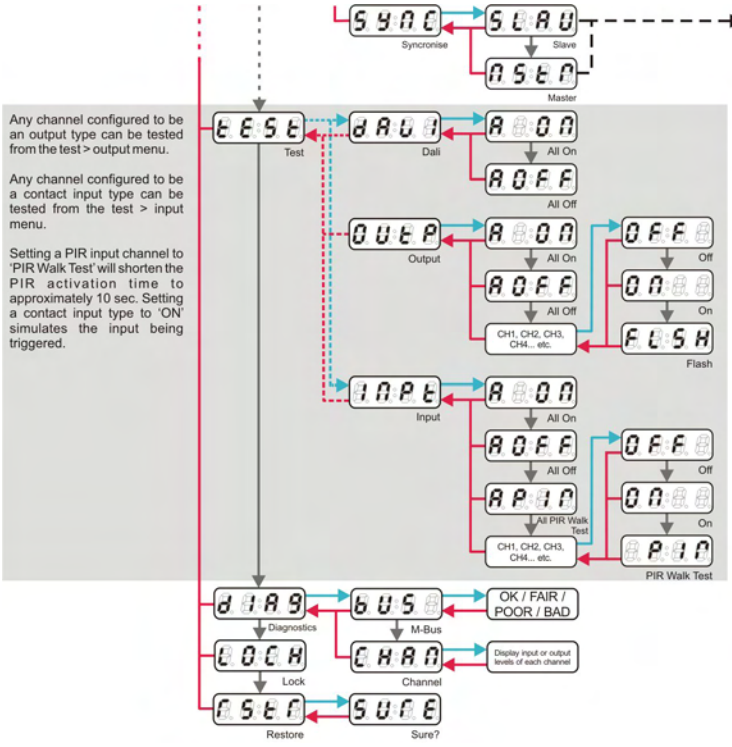
✗ Not Supported
✓ Supported
○ Supported using eDIN Relay Module
◆ Please contact Mode Lighting for further technical information

- In order to test an eDIN system once it has been wired together, follow the shaded instructions on the back page.

IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to both Power Supply & Universal Ballast Control module must be protected by a suitably rated MCB.

ONBOARD SET-UP: TESTING



Using Synchronise Option (SYNC) for Standalone Setup

This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.

1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show 'RDY' (ready) on the display.

2. Now set the module which you wish to copy settings from to 'master' (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.

FAULT FINDING

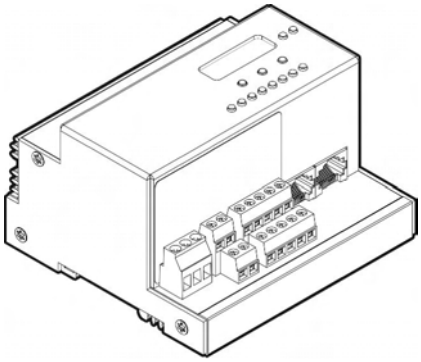
- **'ERR' displayed when entering 'ASGN' menu.**

  No ballasts have been found yet. Carry out step 1 of DALI ballast commissioning procedure first.

- **When finding ballasts during commissioning, the number of ballasts found is not the number expected.**

  When carrying out step 1 of the DALI commissioning procedure, all ballasts connected to the DALI universe should extinguish. If any do not, check the wiring to those ballasts.

  Due to the way DALI operates, in rare cases two ballasts may reply as one. If the number of ballasts found is less than expected and the wiring is correct, repeat step 1 of the commissioning procedure.



Control4
www.control4.com

The DIN-rail mounting modular lighting control solution from Control4.

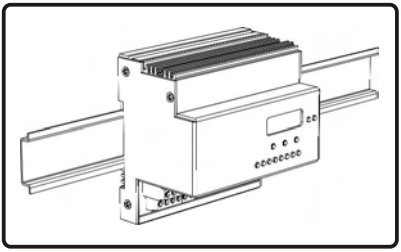
CONTENTS:
- Universal Ballast Control Module
- 300mm Data-Bus Link Cable

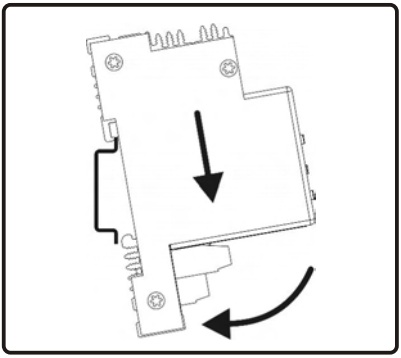
INSTALLATION GUIDE:

Universal Ballast Control Module C4-DR-UBC-M

The Universal Ballast Control module is a 6M sized DIN rail mounted unit which can be configured to accept up to 4 channels of 0-10V, 1-10V, DSI or switched contact inputs or to provide up to 4 channels of fully isolated 0-10V, 1-10V or DSI outputs as well as a single DALI universe.

SPECIFICATION & MOUNTING





Modules must be installed within a suitable surface mount enclosure with integral DIN rail. Installation must be carried out by a qualified electrician in accordance with National Wiring Regulations and other applicable regulations. Compliance to EC EMC and Low Voltage Directives may be invalidated if not used or installed according to the published specification.

Control4 modules are designed to attach to a standard 35mm wide DIN rail *(EN 50022, BS 5584)*. To install, simply hook the module from the top, push down and click into place (see diagram).

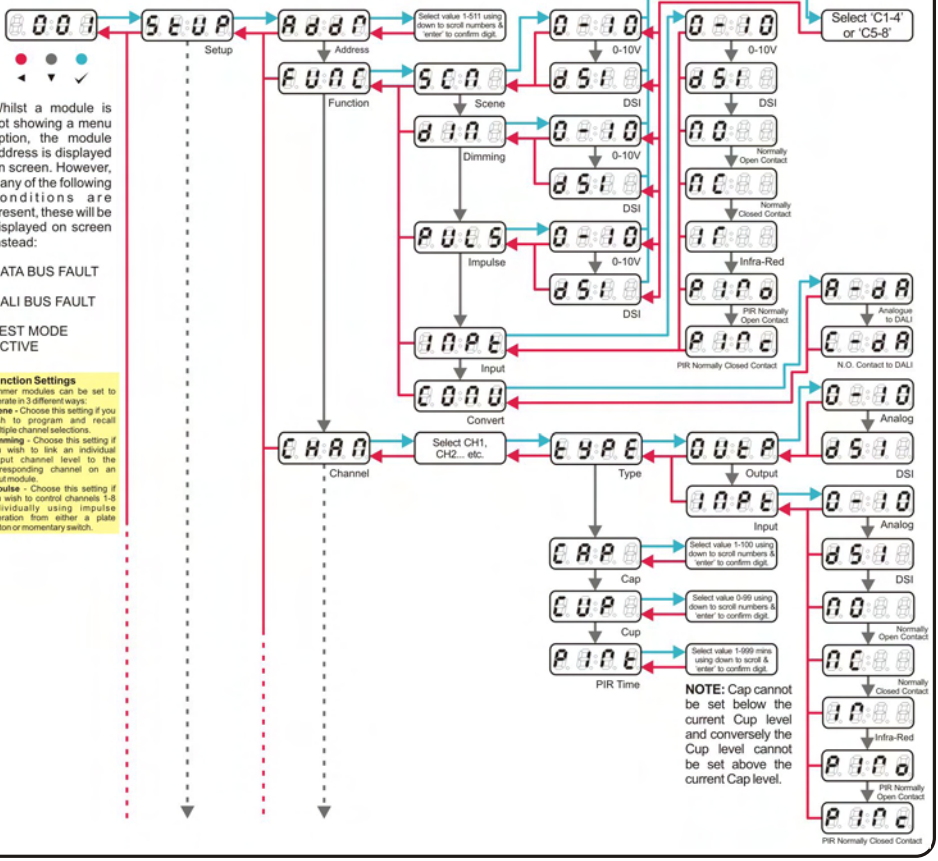
All Control4 modules must be earthed. Modules contain no user serviceable parts and should not be

Module Size:	6M, L 106mm x W 100mm x H 64mm
Mains Input:	90-264V, 50 / 60Hz
Power Input:	24V, 50mA nominal
Max. Wire Size:	1.5mm²
Control Input:	Mode M-BUS
M-BUS Connection:	2 x RJ-45 (in and out)
ta Max:	40°C
tc Max:	60°C
Standards:	(CE EMC & LVD) EN55015, EN61547, EN61000-3-2, EN61000-3-3 & EN60669-2-1
0-10V / 1-10V / DSI Outputs:	100mA each max.
Max. # DALI Ballasts:	64
DALI PSU:	250 mA

CE

DS213A (V1.1) © Control4 2010

ONBOARD SET-UP: I/O SETTINGS



Whilst a module is not showing a menu option, the module address is displayed on screen. However, if any of the following conditions are present, these will be displayed on screen instead:

DATA BUS FAULT

DALI BUS FAULT

TEST MODE ACTIVE

Function Settings

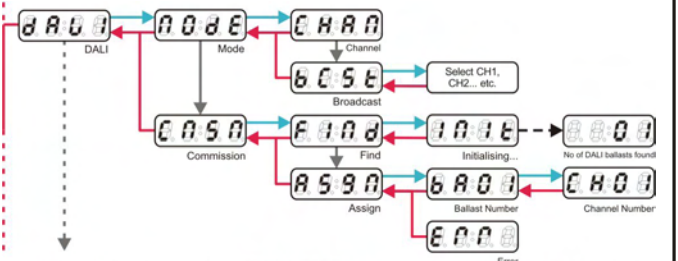
Dimmer modules can be set to operate in 3 different ways:

Scene - Choose this setting if you wish to program and recall multiple channel selections.

Dimming - Choose this setting if you wish to link an individual output channel level to the corresponding channel on an input module.

Impulse - Choose this setting if you wish to control channels 1-8 individually using impulse operation from either a plate button or momentary switch.

DALI OPERATING MODES



- The module can control DALI ballasts in one of two modes. The operating mode 'CHAN' (channel mode) or 'BCST' (broadcast mode) is selected from the SETUP-DALI-MODE menu.
- In 'Broadcast' mode, the current level of one Control4 channel is broadcast to all of the DALI ballasts that are connected. When broadcast mode is selected, a sub menu appears from which the user selects which Control4 channel to broadcast (CH1 to CH8).
- In 'Channel' mode, every ballast is allocated to a Control4 channel and individually controlled as per other Control4 output modules. In this mode, the ballasts need to be commissioned. The procedure for this is outlined on the following page (in 'Broadcast' mode, no commissioning is required).

DALI BALLAST COMMISSIONING

DALI ballast commissioning is only required for modules running in 'channel' operation, it is not required for modules running in 'broadcast' mode. Commissioning of the DALI ballasts running in stand-alone mode (ie: without a Network Processor Unit) is carried out using two simple steps: The first step is to 'find' all of the ballasts connected to the ballast control module and the second step is to assign each ballast to a Control4 channel.

- **Step 1 :** Find Ballasts

From the SETUP-DALI-CMSN menu, select 'FIND'. 'INIT' will then be displayed, the display will 'ripple' and all of the ballasts connected to the UBC module will extinguish their lamps.

The display on the UBC will then display ' xx' where xx is the number of ballasts found so far. As each ballast is found, its lamp will dim to approx 50% and the display of the number of ballasts found will increment. It will take a few seconds to find each ballast.

When all the ballasts are found, the display will stop 'rippling' and 'FDxx' will be displayed, where xx is the total number of ballasts found. Once all the ballasts are found, press the ✓ (select) button where you will be returned to the DALI-CMSN menu. Proceed to step 2.

- **Step 2 :** Allocate each ballast to a Control4 channel

From the SETUP-DALI-CMSN menu, select 'ASGN'. 'BAxx' will then be displayed, where xx is the current ballast number to assign. All of the lamps connected to the ballasts will be extinguished except the currently selected ballast which will be dimmed to 50%.

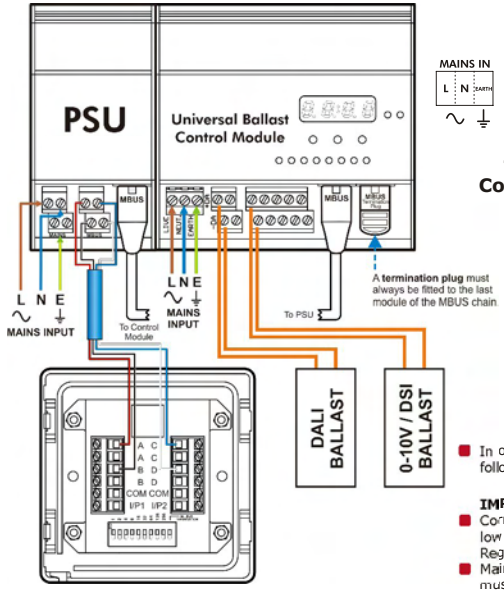
The scroll '▾' button can then be used to select the ballast to assign. When the button is pressed, the ballast number is incremented (up to the total number of ballasts found in step 1, where it will reset to 1).

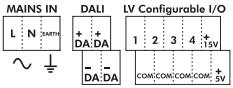
Once the ballast to be assigned is found, press the '✓' button. The display will then change to show 'CHxx' where xx is the Control4 channel that that ballast should be controlled by (If it has not been previously set, it will be 0). The '▾' button can then be used to change the channel assignment (between 1 and 8). Once the desired channel is displayed, the '✓' button should be pressed to store the assignment.

The display will then show 'DONE' and the user is returned to the ballast selection so that the next ballast can be assigned.

- **Step 3:** Ensure that DALI MODE is set to 'CHAN'.

WIRING





Terminal Configuration

SUPPORTED CONTROL TYPES

Protocol	Input	Output
0-10V	✓	✓
1-10V	✓	✓
DSI	✓	✓
DMX	✗	✗
Volt-Free Contact	✓	○
Infrared	◆	✗

✗ Not Supported

✓ Supported

○ Supported using Control4 Relay

◆ Please contact Mode Lighting for further technical information

- In order to test a Control4 system once it has been wired together, follow the shaded instructions on the back page.

IMPORTANT:

- Correctly certified cables must be used for all mains voltage and extra low voltage MBUS connections in accordance with National Wiring Regulations and other applicable regulations.
- Mains input to both Power Supply & Universal Ballast Control module must be protected by a suitably rated MCB.

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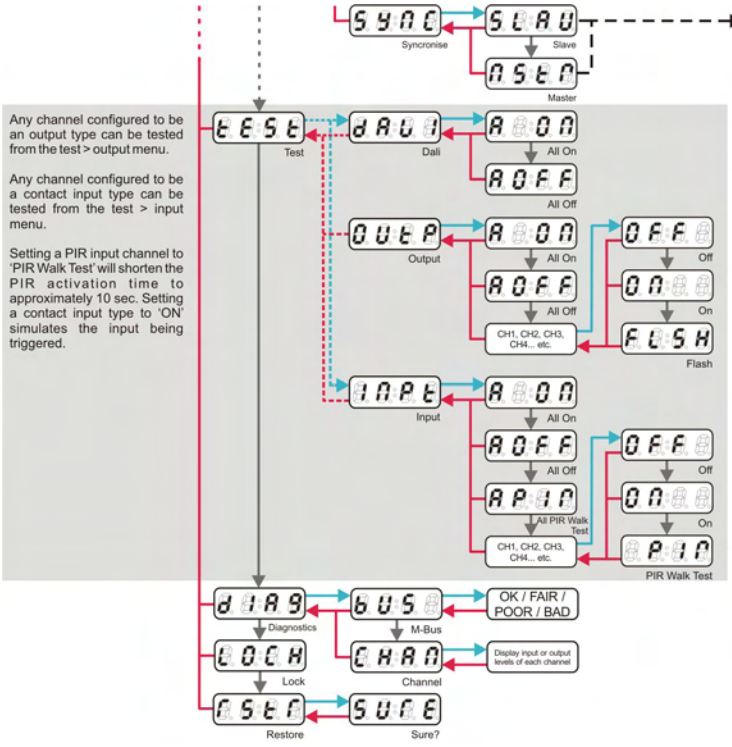
ONBOARD SET-UP: TESTING



Any channel configured to be an output type can be tested from the test > output menu.

Any channel configured to be a contact input type can be tested from the test > input menu.

Setting a PIR input channel to 'PIR Walk Test' will shorten the PIR activation time to approximately 10 sec. Setting a contact input type to 'ON' simulates the input being triggered.

Using Synchronise Option (SYNC) for Standalone Setup

This menu option should be used when scenes are needed to be copied to a unit or units that were not part of the MBUS chain during initial setup (eg: a replacement module). The specific settings that are copied during this process are: scene levels, scene fade times, impulse levels and plate LED colours.

1. Begin by setting all modules that you wish to copy settings to, to slave (SLAV) mode. These units should now show 'RDY' (ready) on the display.

2. Now set the module which you wish to copy settings from to 'master' (NSTR). This unit will now display 'SND' (send) as it sends all of the relevant data to the slave units which will show 'RCV' (receiving) on screen. When all units have finished sending/receiving they will flash 'DONE' and return to the 'SYNC' menu.

FAULT FINDING

- **'ERR' displayed when entering 'ASGN' menu.**

  No ballasts have been found yet. Carry out step 1 of DALI ballast commissioning procedure first.

- **When finding ballasts during commissioning, the number of ballasts found is not the number expected.**

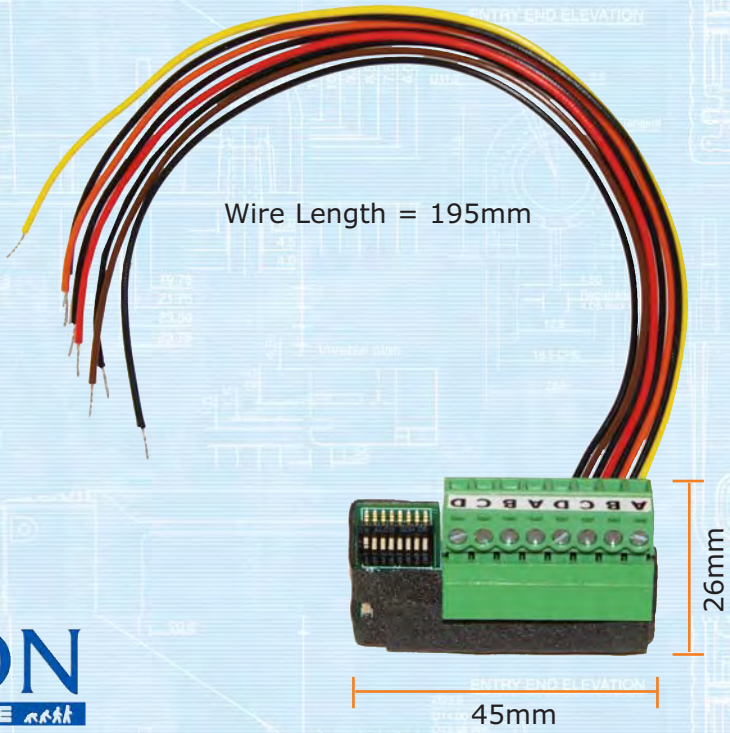
  When carrying out step 1 of the DALI commissioning procedure, all ballasts connected to the DALI universe should extinguish. If any do not, check the wiring to those ballasts.

  Due to the way DALI operates, in rare cases two ballasts may reply as one. If the number of ballasts found is less than expected and the wiring is correct, repeat step 1 of the commissioning procedure.

MODE LIGHTING

EVOLUTION IT WAS ONLY A MATTER OF TIME

Contact Input Module EVO-INT-CI-04



EVOLUTION IT WAS ONLY A MATTER OF TIME

- FOUR Contact Inputs.
- PLUGGABLE 2.5mm screw terminal connections for M-Bus.
- TRIGGER on either contact closed / open / held closed / released-after-held states.
- UP TO 255 modules per M-Bus network (over 1000 inputs).
- INPUT SENSITIVITY (contact closed / held time) and de-bounce is configurable from PC software for each input.
- INPUT TYPE (normally-open / normally-closed) may be inverted in software without the need for rewiring.
- WIRE INPUTS for switch connections.
- M-BUS Power/Data Indicator LED.
- NO ADDITIONAL power supply required.
- COMPLIES with EC EMC and Low Voltage Directives CE
- TWO YEAR warranty.

TECHNICAL DATA

EVO-INT-CI-04	
Power Supply	24V DC, 20mA (from M-Bus)
Protocol	Mode Evolution M-BUS
Contact	4 x Volt free contact inputs or up to 24V DC
Switching Level	5V - 24V DC (NB. Invert state using the configuration software for non volt-free operation).

EVO-INT-CI-04	
Weight	95g
Standards	Complies with EC, EMC and Low Voltage Directives CE
Dimensions	45mm x 26mm x 11mm
Contact Input Wire Length	195mm

Mode Lighting (UK) Ltd, The Maltings, 63 High Street, Ware, Hertfordshire, SG12 9AD, ENGLAND. Telephone:+44 (0)1920 462121 Facsimile:+44 (0)1920 466881
e-mail:sales@modelighting.com website:www.evolutioncontrols.com

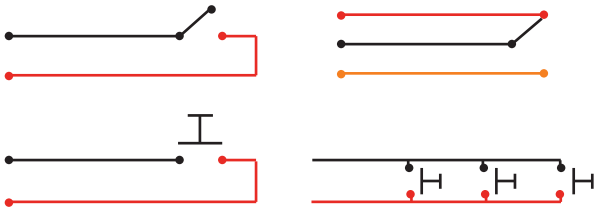
DESCRIPTION

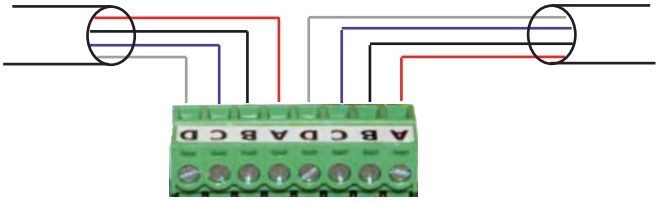
The Evolution Contact Input Module allows connection of up to four independent volt-free contact closure inputs to trigger events on any part of the Evolution system. Inputs can be from retractive switches, push buttons, rocker switches, PIR sensors or relay outputs from security systems etc. The inputs may be used to trigger any operation in the Evolution software including "Impulse" control, or multi-step toggling operations. Triggering may be on any state: closed, opened, held-closed or released-after-being-held.

Evolution is a versatile and highly configurable architectural control system designed for both lighting and peripheral management. Evolution is uniquely adaptable, making it an ideal choice for use in a vast number of applications including modern smart homes, shopping centres, restaurants, hotels, cruise ships, boardrooms, hospitality suites and offices. System features include RS232, DMX, DSI and 1-10v controls. A built-in astronomical clock facilitates events triggered at any time of day, linked with sunrise - sunset calculations or by user definable seasons. Any input may control any output with the ability to provide operation of a sequence of events, for example, control of lighting, blind motors, commands to building management systems, colour changing etc. Unique features such as distributed intelligence make the Evolution simple to install and maintain.
All Mode products are guaranteed for a two year period.

EVO-INT-CI-04

Example Switch Wiring

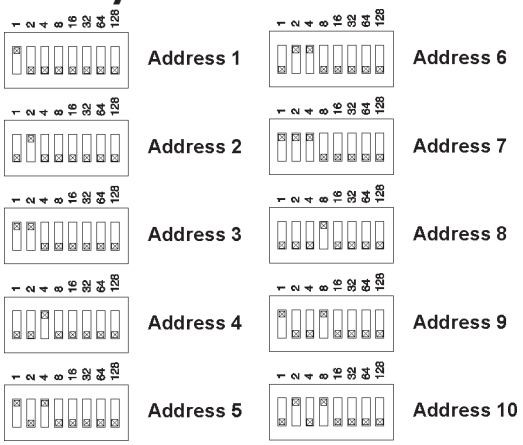




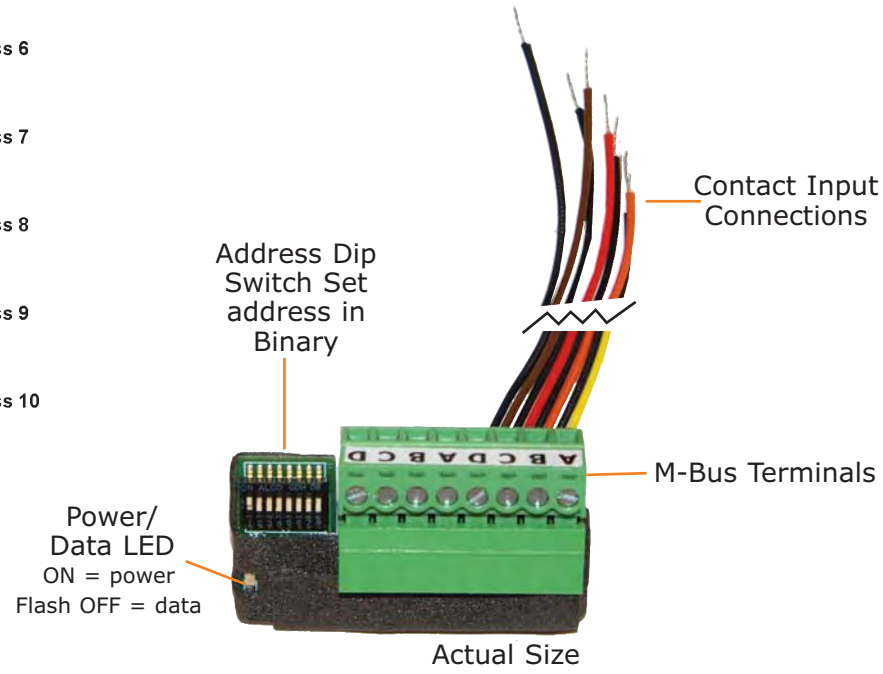
M-Bus Wiring

Recomended Cable Type: Mode M-Bus
or Belden 1502R

Binary Addresses



Wire	Function
Black	Common/Switch Return
Brown	Channel 1
Red	Channel 2
Orange	Channel 3
Yellow	Channel 4


Contact Input Connections
Address Dip Switch Set address in Binary
M-Bus Terminals
Power/ Data LED
ON = power
Flash OFF = data
A B C D A B C D
Actual Size

COMPANY SUMMARY

Mode Lighting (UK) Limited is a subsidiary of a privately owned holding company which has five associated electronics companies. Established in 1970, Mode designs and manufactures electronic products principally for the lighting industry. These include Architectural Dimming Systems, Electronic Transformers for low voltage lighting, Electronic Convertors for neon and cold cathode lighting, colour changing lighting and control systems and LED lighting systems.

EVOLUTION **RS232 Interface** **EVO-INT-232**

- M-BUS TO RS232 bi-directional gateway.
- INDIVIDUALLY ADDRESSABLE.
- COMPACT SIZE for mounting in AV cabinets.
- MODE products are guaranteed for two years.

EVOLUTION
IT WAS ONLY A MATTER OF TIME

TECHNICAL DATA

	EVO-INT-232
Power Supply	+24V DC from Dataline.
Protocol	M-BUS and RS232.
Configuration	Selectable baud and bit rates (via PC software).
RS232 Commands	Configurable by Evolution Software.
Connection	M-Bus - RJ10 Connector RS232 - 9 way D Ttype

	EVO-INT-232
Weight	0.95 kgs.
Dimensions	89mm x 57mm x 27mm.
Packed Size	166mm x 105mm x 80mm.
Packed Weight	250 grams.
Standards	Complies with EC,EMC and Low Voltage Directives.

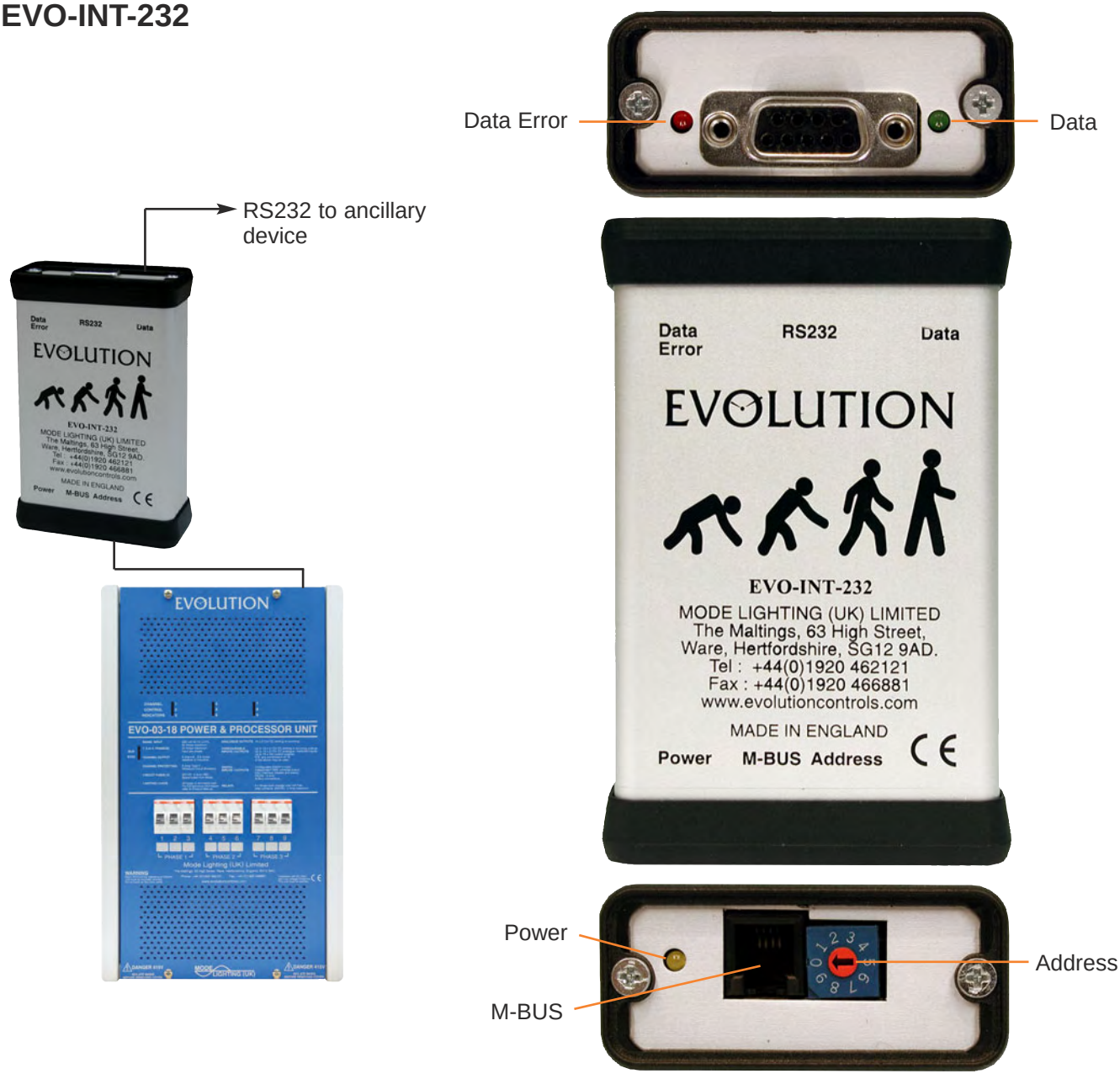
Mode Lighting (UK) Ltd, The Maltings, 63 High Street, Ware, Hertfordshire, SG12 9AD, ENGLAND. Telephone:+44 (0)1920 462121 Facsimile:+44 (0)1920 466881
e-mail:sales@modelighting.com website:www.evolutioncontrols.com

DESCRIPTION

The RS232 Interface extends the integration capabilities of the Evolution system by adding extra RS232 connections to those already included in the power and processor units. The interface is bi-directional allowing the Evolution system to send commands to external devices and receive commands from integration control systems, touch screens, and PC's.

Evolution is a versatile and highly configurable architectural control system designed for both lighting and peripheral management. Evolution is uniquely adaptable, making it an ideal choice for use in a vast number of applications including modern smart homes, shopping centres, restaurants, hotels, cruise ships, boardrooms, hospitality suites and offices. System features include RS232, DMX, DSI, and 1-10v controls. A built-in astronomical clock facilitates events triggered at any time of day, linked with sunrise - sunset calculations or by user definable seasons. Any input may control any output with the ability to provide operation of a sequence of events, for example, control of lighting, blind motors, commands to building management systems, colour changing etc. Unique features such as self-program-on-installation and distributed intelligence make the Evolution simple to install and maintain.

EVO-INT-232



COMPANY SUMMARY

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EVOLUTION Control Plates & Fascias

EVO-LCD-55

EVO-LCD-55-BLK with EVO-L-PBR-55

EVO-LCD-55-BLK with EVO-L-BSS-55

EVO-LCD-55-WHI with EVO-L-WHI-55

- TWIN GANG PLATE with Graphic LCD display.
- STYLISH SCREWLESS fascias.
- RGB COLOUR SELECTION for button indicators and backlight to LCD display.
- BUTTON COLOUR OPTIONS white or black.
- USER CONFIGURABLE button actions.
- PROGRAMMING socket located under front fascia.
- INTEGRAL IR Infrared receiver.
- CONTACT INPUTS (4) for configurable control.
- DIFFERENT FASCIA FINISHES available.
- MODE products are guaranteed for two years.

EVOLUTION
IT WAS ONLY A MATTER OF TIME

TECHNICAL DATA

	EVO-LCD-55 Control Plate
Power Supply	+24 Volt (from M-BUS).
Protocol	Mode M-Bus.
Controls	10 buttons and Infra red receiver.
Inputs	4 x VF inputs (configurable operation).
Indication	Individual indicator and LCD backlight selection - 32 colours (user selectable)
LCD Display	128 x 64 pixel mono graphic display.
Dimensions	146 mm x 87 mm x 35 mm. Weight 0.25kgs.
Fixing	Suits standard UK twin gang box (40mm deep type).
Standards	Complies with EC, EMC and Low Voltage Directives.

ORDER CODES

	Control Plates
EVO-LCD-55-BLK	Control plate, 10 Black Buttons.
EVO-LCD-55-WHI	Control plate, 10 White Buttons.

	Fascias
EVO-L-PBR-55	Fascia, MK Aspect Polished Brass.
EVO-L-BSS-55	Fascia, MK Aspect Brushed Stainless Steel.
EVO-L-POC-55	Fascia, MK Aspect Polished Chrome.
EVO-L-WHI-55	Fascia, MK Aspect White.

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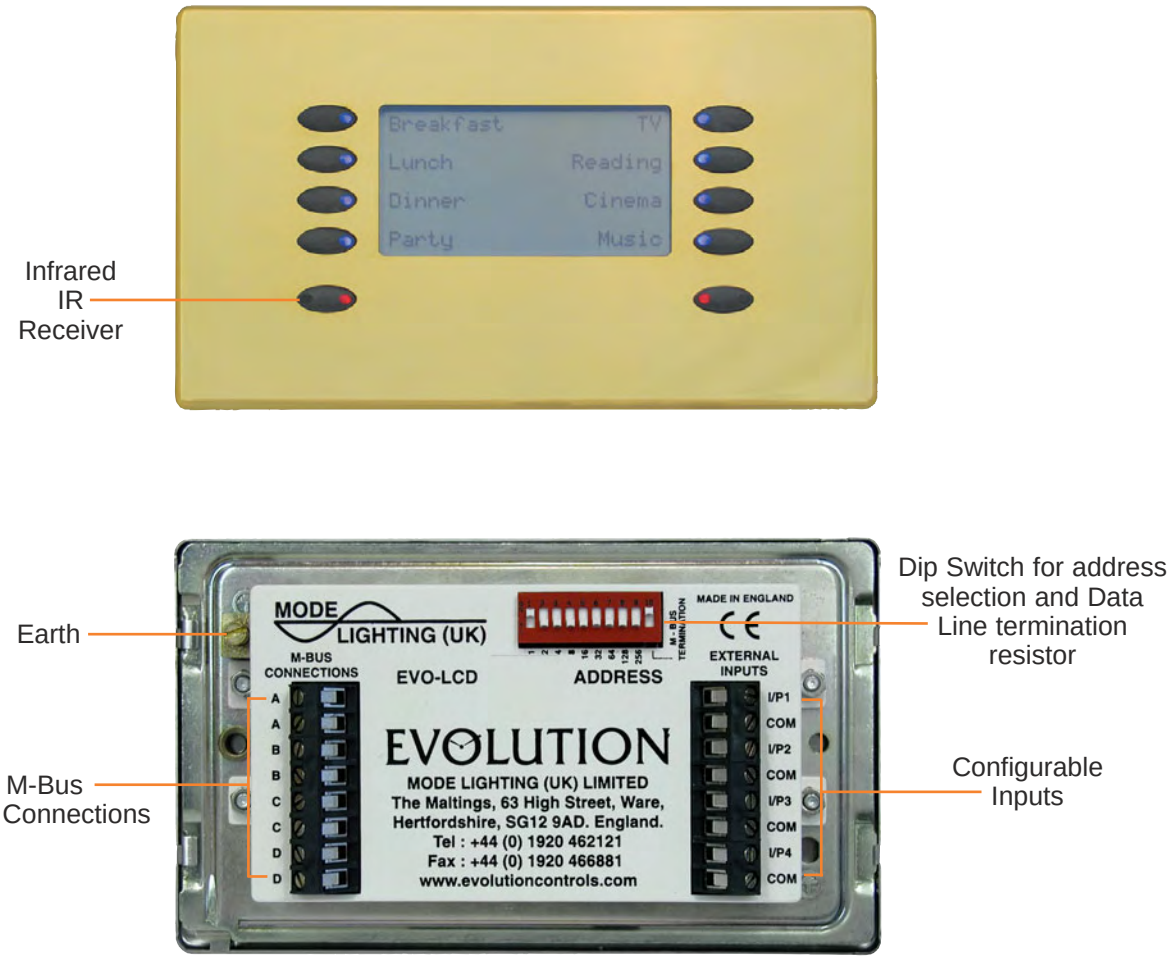
Evolution control panels are supplied with stylish MK Aspect screwless fascia plates. Several finishes are available from stock including Brushed Stainless Steel, Polished Brass, Polished Chrome and White. The action / operation of each button can be individually configured to allow selection of lighting scenes, operation of blinds, commands to RS232 devices or any combination of these features. The LCD graphic display enables the user to add descriptive text for the button operations and also include images and logos. Simple programming functions can also be performed with the display providing visual prompts to assist with the task. All Mode products are guaranteed for a two year period.

EVO-LCD-55 INTERNAL DETAILS



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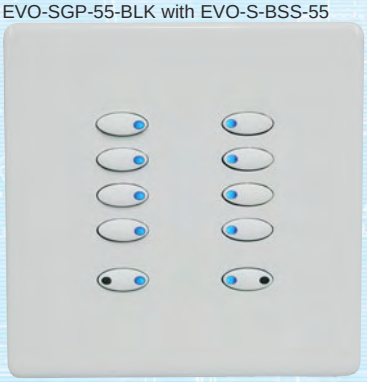
EVOLUTION Control Plates & Fascias

EVO-SGP-55

EVO-SGP-55-BLK with EVO-S-PBR-55

EVO-SGP-55-BLK with EVO-S-BSS-55



EVO-SGP-55-WHI with EVO-S-WHI-55

- SINGLE GANG PLATE.
- STYLISH SCREWLESS fascias.
- RGB COLOUR SELECTION for button indicators.
- BUTTON COLOUR OPTIONS white or black.
- USER CONFIGURABLE button actions.
- PROGRAMMING socket located under front fascia.
- INTEGRAL IR Infrared receiver.
- CONTACT INPUTS (2) for configurable control.
- DIFFERENT FASCIA FINISHES available.
- MODE products are guaranteed for two years.

EVOLUTION
IT WAS ONLY A MATTER OF TIME

TECHNICAL DATA

	EVO-SGP-55 Control Plate
Power Supply	+24 Volt (from dataline).
Protocol	M-Bus.
Controls	10 buttons and Infra red receiver.
Inputs	2 x inputs (configurable operation).
Indication	Individual indicator colour selection - 32 colours (user selectable).
Dimensions	87 mm x 87 mm x 25 mm. Weight 0.17kgs.
Fixing	Suits standard UK single gang box (40mm deep type).
Standards	Complies with EC, EMC and Low Voltage Directives.

ORDER CODES

	Control Plates
EVO-SGP-55-BLK	Control plate, 10 Black Buttons.
EVO-SGP-55-WHI	Control plate, 10 White Buttons.

	Fascias
EVO-S-PBR-55	Fascia, MK Aspect Polished Brass.
EVO-S-BSS-55	Fascia, MK Aspect Brushed Stainless Steel.
EVO-S-POC-55	Fascia, MK Aspect Polished Chrome.
EVO-S-WHI-55	Fascia, MK Aspect White.

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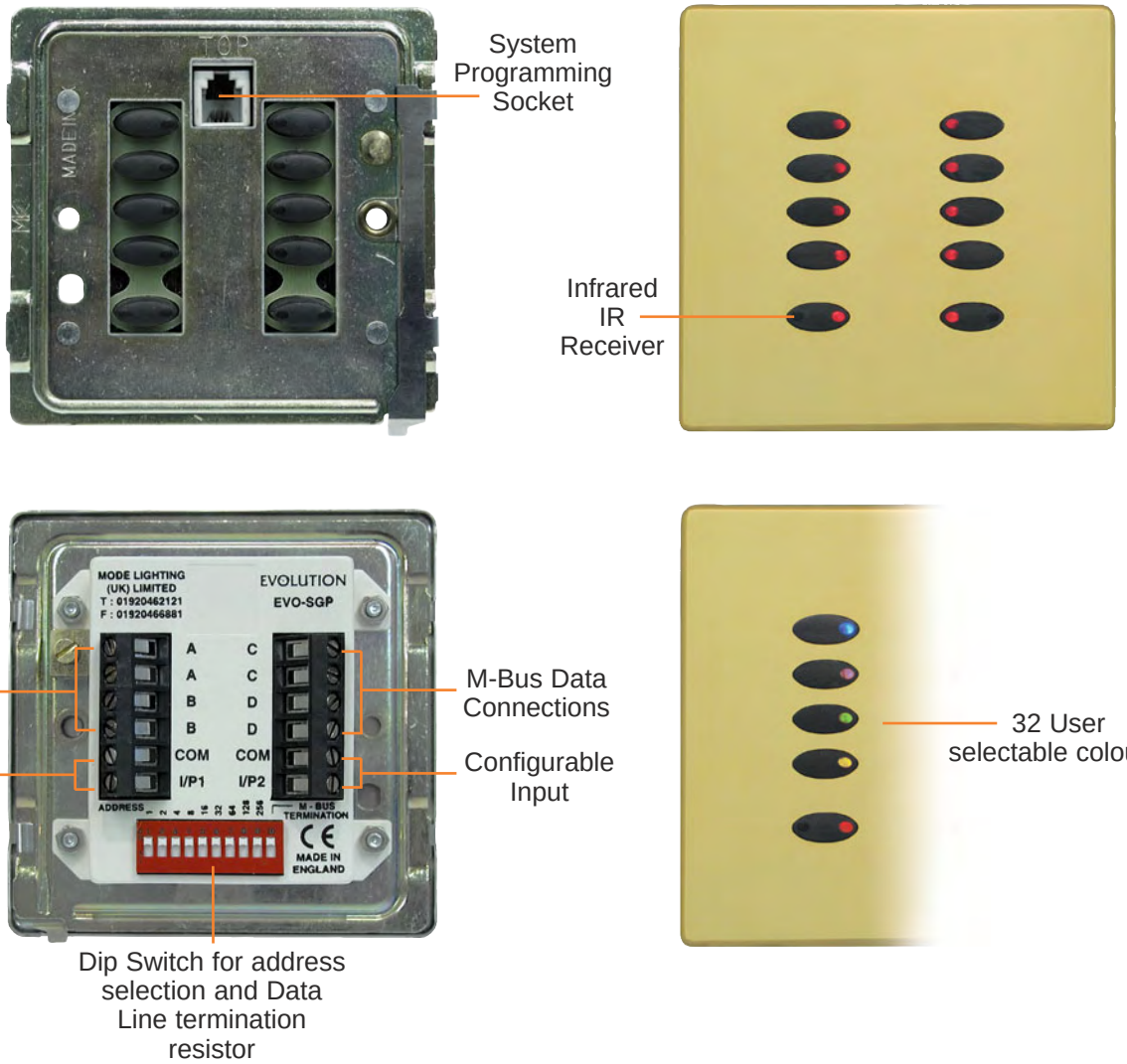
EVO-SPG-55 INTERNAL DETAILS



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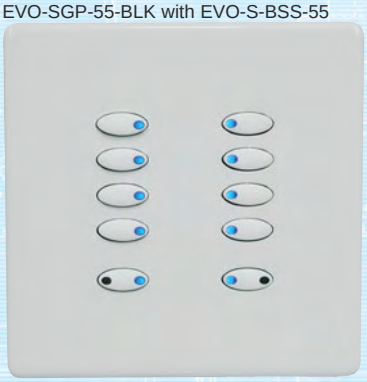
EVOLUTION Control Plates & Fascias

EVO-SGP-55

EVO-SGP-55-BLK with EVO-S-PBR-55

EVO-SGP-55-BLK with EVO-S-BSS-55



EVO-SGP-55-WHI with EVO-S-WHI-55

- SINGLE GANG PLATE.
- STYLISH SCREWLESS fascias.
- RGB COLOUR SELECTION for button indicators.
- BUTTON COLOUR OPTIONS white or black.
- USER CONFIGURABLE button actions.
- PROGRAMMING socket located under front fascia.
- INTEGRAL IR Infrared receiver.
- CONTACT INPUTS (2) for configurable control.
- DIFFERENT FASCIA FINISHES available.
- MODE products are guaranteed for two years.

EVOLUTION
IT WAS ONLY A MATTER OF TIME

TECHNICAL DATA

	EVO-SGP-55 Control Plate
Power Supply	+24 Volt (from dataline).
Protocol	M-Bus.
Controls	10 buttons and Infra red receiver.
Inputs	2 x inputs (configurable operation).
Indication	Individual indicator colour selection - 32 colours (user selectable).
Dimensions	87 mm x 87 mm x 25 mm. Weight 0.17kgs.
Fixing	Suits standard UK single gang box (40mm deep type).
Standards	Complies with EC, EMC and Low Voltage Directives.

ORDER CODES

	Control Plates
EVO-SGP-55-BLK	Control plate, 10 Black Buttons.
EVO-SGP-55-WHI	Control plate, 10 White Buttons.

	Fascias
EVO-S-PBR-55	Fascia, MK Aspect Polished Brass.
EVO-S-BSS-55	Fascia, MK Aspect Brushed Stainless Steel.
EVO-S-POC-55	Fascia, MK Aspect Polished Chrome.
EVO-S-WHI-55	Fascia, MK Aspect White.

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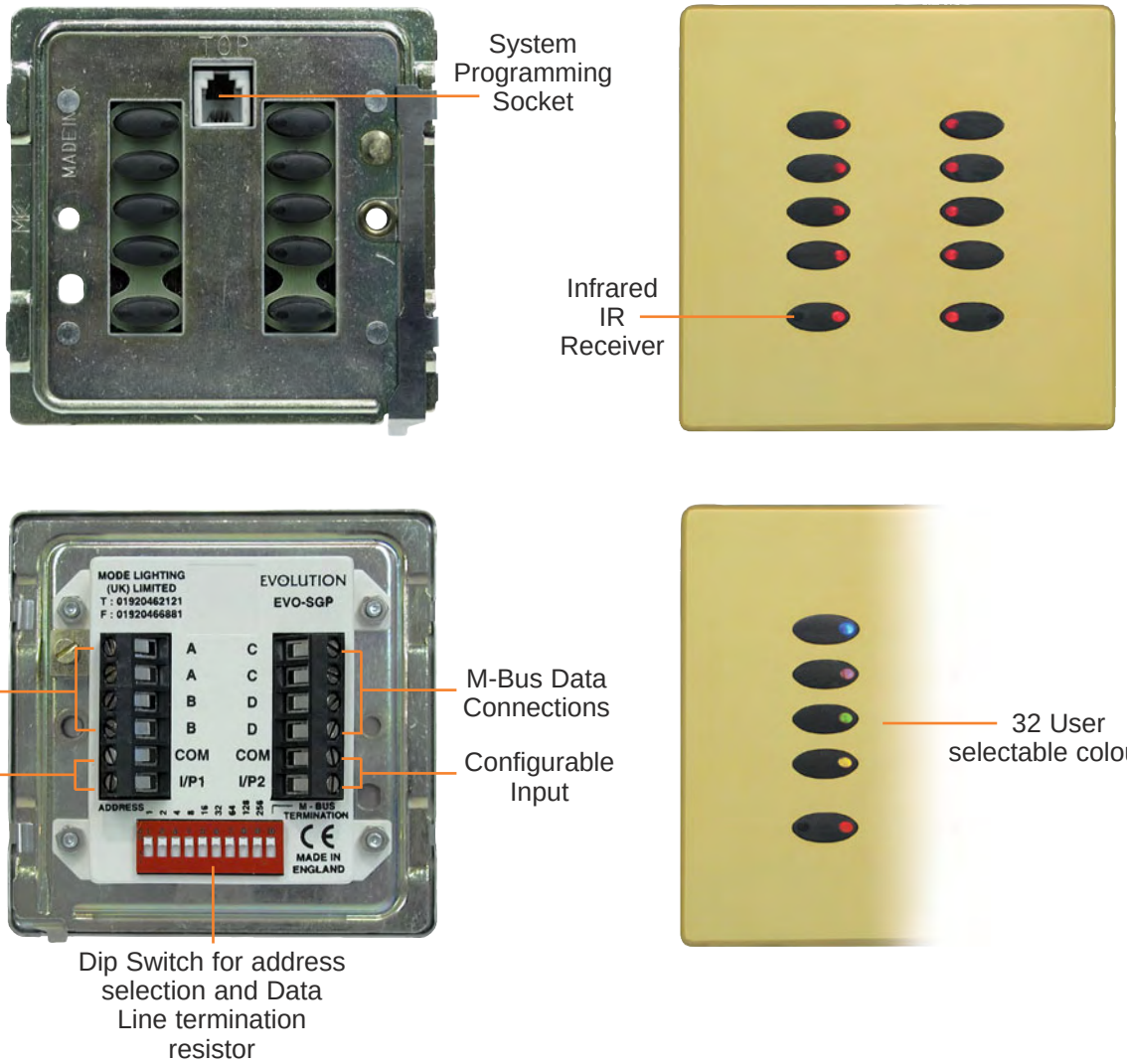
EVO-SPG-55 INTERNAL DETAILS



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MODE LIGHTING (UK)

EVOLUTION Control Plates & Fascias

EVO-SGP-50

EVO-SGP-55-BLK with EVO-S-PBR-55

EVO-SGP-55-BLK with EVO-S-BSS-55

EVO-SGP-55-WHI with EVO-S-WHI-55

- SINGLE GANG PLATE.
- STYLISH SCREWLESS fascias.
- RGB COLOUR SELECTION for button indicators.
- BUTTON COLOUR OPTIONS white or black.
- USER CONFIGURABLE button actions.
- PROGRAMMING socket located under front fascia.
- INTEGRAL IR Infrared receiver.
- CONTACT INPUTS (2) for configurable control.
- DIFFERENT FASCIA FINISHES available.
- MODE products are guaranteed for two years.

EVOLUTION
IT WAS ONLY A MATTER OF TIME

TECHNICAL DATA

	EVO-SGP-50 Control Plate
Power Supply	+24 Volt (from dataline).
Protocol	M-Bus.
Controls	5 buttons and Infra red receiver.
Inputs	2 x inputs (configurable operation).
Indication	Individual indicator colour selection - 32 colours (user selectable).
Dimensions	87 mm x 87 mm x 25 mm. Weight 0.17kgs.
Fixing	Suits standard UK single gang box (40mm deep type).
Standards	Complies with EC, EMC and Low Voltage Directives.

ORDER CODES

	Control Plates
EVO-SGP-50-BLK	Control plate, 5 Black Buttons.
EVO-SGP-50-WHI	Control plate, 5 White Buttons.

	Fascias
EVO-S-PBR-50	Fascia, MK Aspect Polished Brass.
EVO-S-BSS-50	Fascia, MK Aspect Brushed Stainless Steel.
EVO-S-POC-50	Fascia, MK Aspect Polished Chrome.
EVO-S-WHI-50	Fascia, MK Aspect White.

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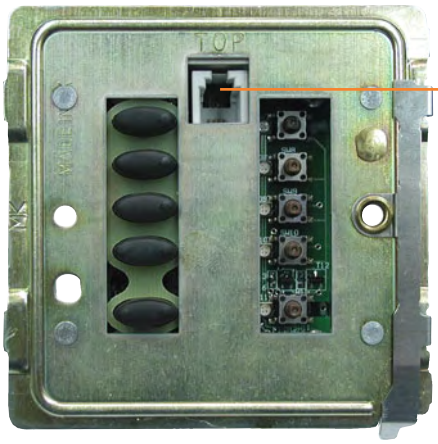
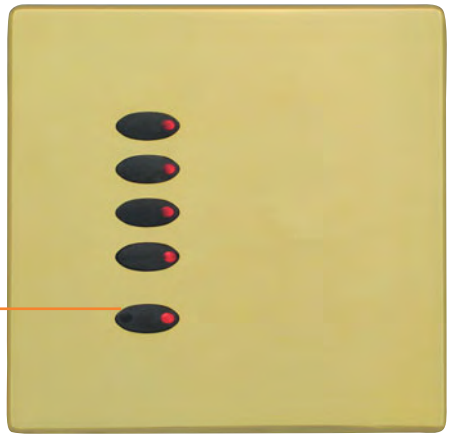
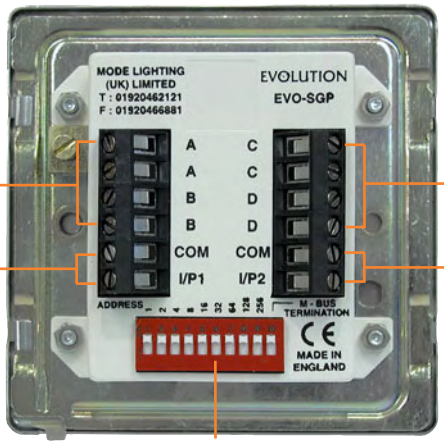
EVO-SGP-50 INTERNAL DETAILS



System Programming Socket



Infrared IR Receiver



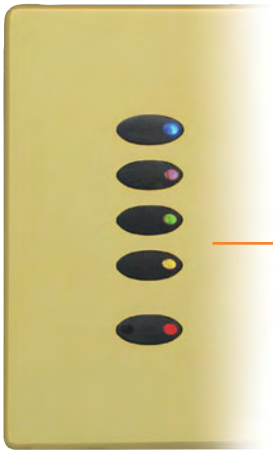
M-Bus Data Connections

Configurable Volt free Input

M-Bus Data Connections

Configurable Input

Dip Switch for address selection and Data Line termination resistor



32 User selectable colours.

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MODE LIGHTING (UK)

EVOLUTION Control Plates & Fascias

EVO-SGP-20

EVO-SGP-55-BLK with EVO-S-PBR-55

EVO-SGP-55-BLK with EVO-S-BSS-55

EVO-SGP-55-WHI with EVO-S-WHI-55

- SINGLE GANG PLATE.
- STYLISH SCREWLESS fascias.
- RGB COLOUR SELECTION for button indicators.
- BUTTON COLOUR OPTIONS white or black.
- USER CONFIGURABLE button actions.
- PROGRAMMING socket located under front fascia.
- INTEGRAL IR Infrared receiver.
- CONTACT INPUTS (2) for configurable control.
- DIFFERENT FASCIA FINISHES available.
- MODE products are guaranteed for two years.

EVOLUTION
IT WAS ONLY A MATTER OF TIME

TECHNICAL DATA

	EVO-SGP-20 Control Plate
Power Supply	+24 Volt (from dataline).
Protocol	M-Bus.
Controls	2 buttons and Infra red receiver.
Inputs	2 x inputs (configurable operation).
Indication	Individual indicator colour selection - 32 colours (user selectable).
Dimensions	87 mm x 87 mm x 25 mm. Weight 0.17kgs.
Fixing	Suits standard UK single gang box (40mm deep type).
Standards	Complies with EC, EMC and Low Voltage Directives.

ORDER CODES

	Control Plates
EVO-SGP-20-BLK	Control plate, 2 Black Buttons.
EVO-SGP-20-WHI	Control plate, 2 White Buttons.

	Fascias
EVO-S-PBR-20	Fascia, MK Aspect Polished Brass.
EVO-S-BSS-20	Fascia, MK Aspect Brushed Stainless Steel.
EVO-S-POC-20	Fascia, MK Aspect Polished Chrome.
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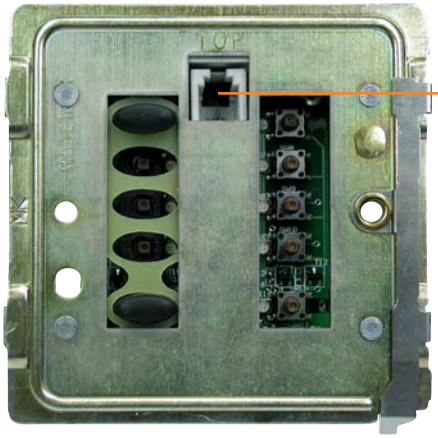
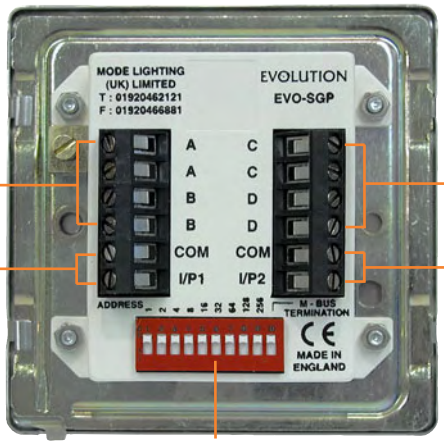
EVO-SGP-20 INTERNAL DETAILS



System Programming Socket

Infrared IR Receiver



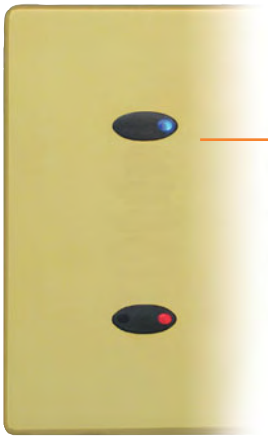
M-Bus Data Connections

Configurable Volt free Input

M-Bus Data Connections

Configurable Input

Dip Switch for address selection and Data Line termination resistor



32 User selectable colours.

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4. APPENDIX B - TECHNICAL SPECIFICATION

4.1 Circuit Diagram

4.2 Parts List

4.3 Change History

The above are Company Confidential to Mode Lighting (UK) Limited and may be viewed upon request.

5. APPENDIX C - TEST RESULTS AND CERTIFICATES - EMC

5.1 Test Results

Confidential

Test Report

Architectural Dimming Systems
Electronic Neon Convertors
Electronic Transformers

MODE LIGHTING (UK) LIMITED,
THE MALTINGS, 63 HIGH STREET,
WARE, HERTFORDSHIRE,
SG12 9AD, ENGLAND.

Telephone: +44 (0) 1920 462121
Facsimile: +44 (0) 1920 466881
e-mail: sales@modelighting.com

Mode eDIN / Control4 DIN Lighting Control System:

DIN-02-08 / DIN-C4-DR-DIM8-M,
DIN-03-04 / DIN-C4-DR-DIM4-M,
DIN-INT-00-08 / DIN-C4-DR-IOX8-M,
DIN-NPU-00-01 / DIN-C4-DR-NPU-M,
DIN-PSU-24V / DIN-C4-DR-PSU-M,
DIN-RP-05-04 / DIN-C4-DR-RM4-M,
DIN-UBC-01-05 / DIN-C4-DR-UBC-M,
EVO-INT-CI-04 / DIN-C4-DR-SW4-M,
EVO/MBUS-INT-232 / DIN-C4-DR-SER-M,
EVO-LCD-55, EVO-SGP-55, EVO-SGP-50,
EVO-SGP-20

Model(s) tested: DIN-02-08, DIN-03-04, DIN-INT-00-08, DIN-NPU-00-01, DIN-PSU-24V, DIN-RP-05-04, DIN-UBC-01-05, EVO-LCD-55, EVO-SGP-55

Test Specification: EN 55015 : 2006, EN 61000-3-2 : 2006, EN 61000-3-3 : 2008, EN 61547 : 2009

Test date: 18th November 2009 to 18th August 2010

Results: The samples tested complied with the requirements when tested to the above specification. This issue supersedes any previous issue.

Prepared by: A C Hayllar

Authorised by:

A C Hayllar
Engineering Director

For and on behalf of Mode Lighting (UK) Limited

Date: 24th September 2010 Ware, Hertfordshire, UK

SCOPE OF COVERAGE:

The Electronic Switches covered by this report are listed below:

Manufacturer:	Mode Lighting (UK) Limited, Ware, SG12 9AD, UK
Responsible Vendor:	Control4, Salt Lake City, Utah 84020, USA
Specification:	EN55015 : 2006, EN 61000-3-2 : 2006, EN 61000-3-3 : 2008, EN 61547 : 2009
Brand Name:	Mode eDIN / Control4 DIN Lighting Control System

Type Reference:

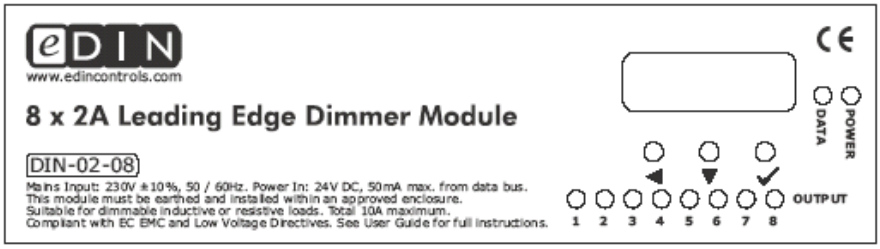
DIN-02-08	8 x 2A Leading Edge Dimmer Module
DIN-03-04	4 x 3A Leading Edge Dimmer Module
DIN-INT-00-08	8 x Channel I/O Module
DIN-NPU-00-01	Network Processor Module
DIN-PSU-24V	Power Supply Module
DIN-RP-05-04	4 x 5A Relay Module
DIN-UBC-01-05	Universal Ballast Control Module
EVO-LCD-55	10 Button LCD Control Plate
EVO-SGP-55	10 Button Control Plate
EVO-SGP-50	5 Button Control Plate
EVO-SGP-20	2 Button Control Plate
EVO-INT-CI-04	4 way Contact Input Module
EVO/MBUS-INT-232	RS232 to MBus Interface

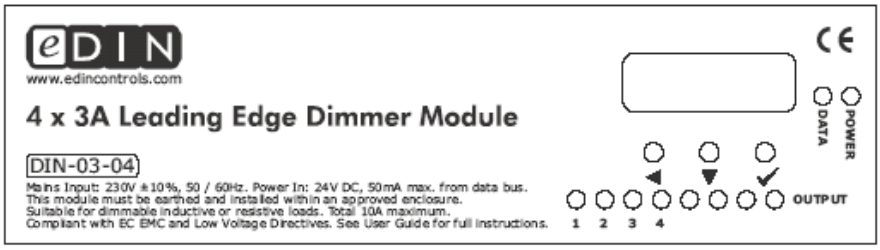
Classification:	Electronic switch Multi-way single pole semiconductor switch (dimmer) and Multi-way single pole electromagnetically operated contact mechanism with micro-gap construction (relay)
Installation:	Household and similar fixed-electrical installation
Location:	Indoor only
Electric shock protection:	Class 1, mains earth required
Load type:	Incandescent lamps at mains or low voltage when fed from a suitable transformer or electronic convertor, fluorescent lamps and motors
Supply voltage:	230V +/-10% 50Hz / 60Hz single phase

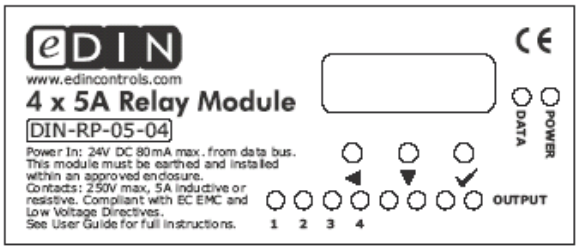
Output current:	DIN-02-08	10A total maximum
	DIN-03-04	10A total maximum
	DIN-RP-05-04	5A maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA
Output Power:	DIN-02-08	2500W total maximum
	DIN-03-04	2500W total maximum
	DIN-RP-05-04	1200W maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA
Ta:	0 to +30°C maximum	

eDIN Standard(s) applied: EN 55015, 61000-3-2, 61000-3-3 and 61547 24th September 2010

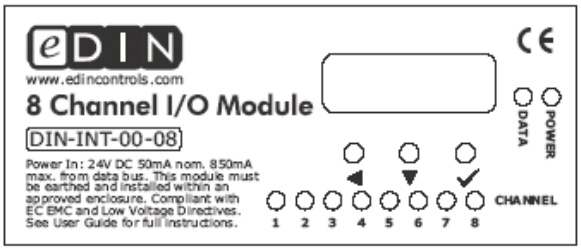
Product Labels:

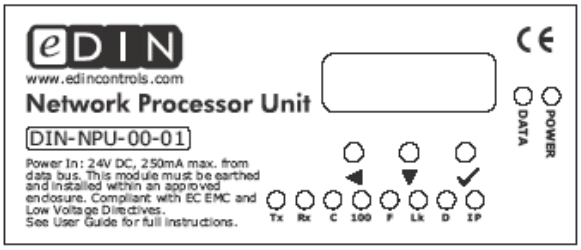

eDIN
www.edincontrols.com
8 x 2A Leading Edge Dimmer Module
DIN-02-08
Mains Input: 230V ±10%, 50 / 60Hz. Power In: 24V DC, 50mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Suitable for dimmable inductive or resistive loads. Total 10A maximum.
Compliant with EC EMC and Low Voltage Directives. See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4 5 6 7 8

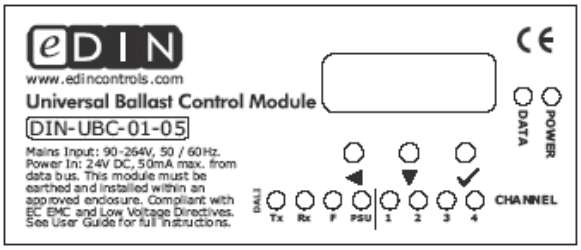

eDIN
www.edincontrols.com
4 x 3A Leading Edge Dimmer Module
DIN-03-04
Mains Input: 230V ±10%, 50 / 60Hz. Power In: 24V DC, 50mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Suitable for dimmable inductive or resistive loads. Total 10A maximum.
Compliant with EC EMC and Low Voltage Directives. See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4


eDIN
www.edincontrols.com
4 x 5A Relay Module
DIN-RP-05-04
Power In: 24V DC 80mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Contacts: 250V max, 5A inductive or resistive. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4

eDIN
www.edincontrols.com
Power Supply
DIN-PSU-24V
Mains Input: 90-264V, 50 / 60Hz.
This module must be earthed and installed within an approved enclosure.
Total 1A output max. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.


eDIN
www.edincontrols.com
8 Channel I/O Module
DIN-INT-00-08
Power In: 24V DC 50mA nom. 850mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
CHANNEL
1 2 3 4 5 6 7 8

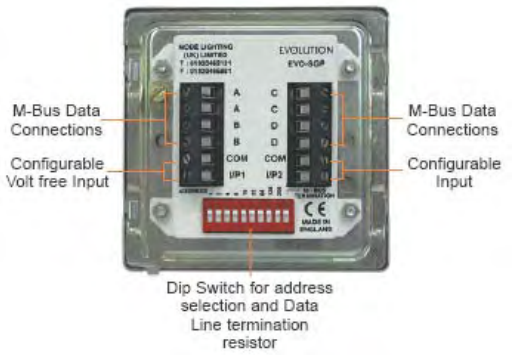

eDIN
www.edincontrols.com
Network Processor Unit
DIN-NPU-00-01
Power In: 24V DC, 250mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
Tx Rx C 100 F Lk D IP


eDIN
www.edincontrols.com
Universal Ballast Control Module
DIN-UBC-01-05
Mains Input: 90-264V, 50 / 60Hz.
Power In: 24V DC, 50mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
CHANNEL
Tx Rx F PSU 1 2 3 4

EVO-SGP-55 front view

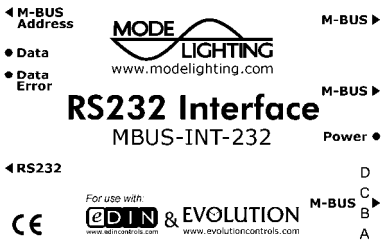
EVO-SGP-50 front view

EVO-SGP-20 front view

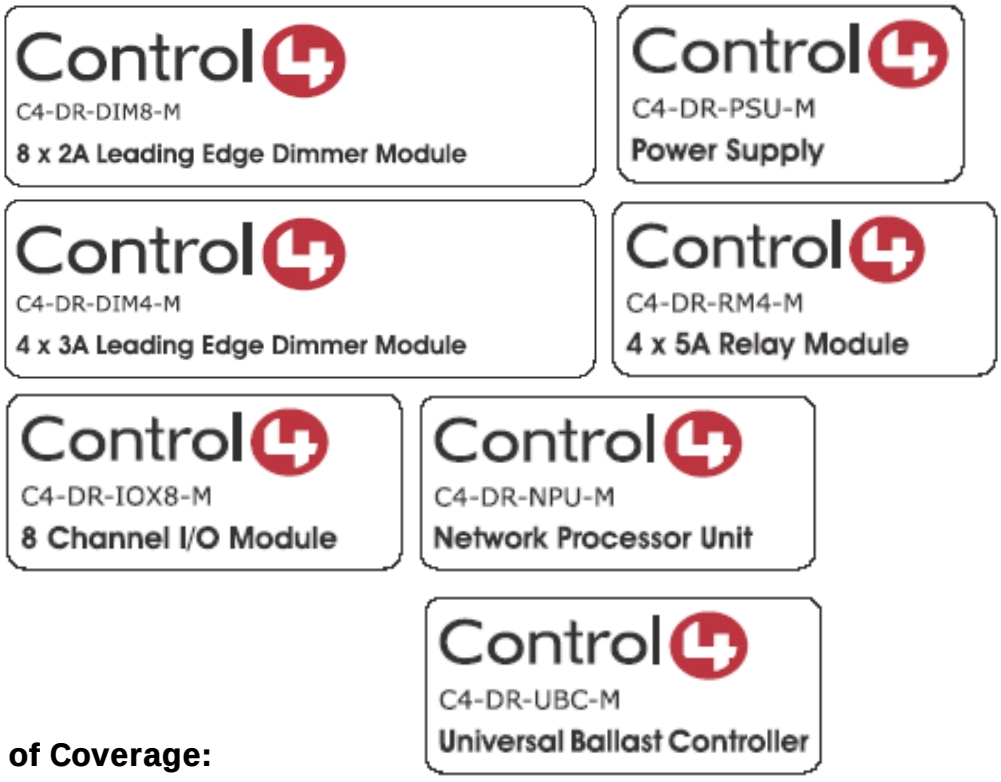

M-Bus Data Connections
Configurable Volt free Input
M-Bus Data Connections
Configurable Input
Dip Switch for address selection and Data Line termination resistor

EVO-SGP-55/50/20 rear view

EVO-INT-CI-04



Product Labels Control4 DIN:



Limitation of Coverage:

The Mode eDIN /Control4 DIN Lighting Control System was reviewed as a stand-alone product and is based upon the type test and inspection of sample product.

THIS TEST REPORT IS BASED ON:

	EN 55015 : 2006 Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
and	EN 61000-3-2 : 2006 Electromagnetic compatibility (EMC) – Part 3: Limits – Section 2: Limits for harmonic current emissions (input current </= 16A per phase)
and	EN 61000-3-3 : 2008 Electromagnetic compatibility (EMC) – Part 3: Limits – Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment rated current </= 16A
and	EN 61547 : 2009 Equipment for general lighting purposes – EMC immunity requirements
Installation:	Household and similar fixed-electrical installation
Location:	Indoor only
Electric shock protection:	Class 1, mains earth required
Rated supply voltage:	230V +/- 10%
Supply frequency:	50Hz
Rated supply current:	10.0A maximum
Ambient temperature:	0^{o}C to 25^{o}C

DIN-02-08 / EVO-SGP-55

CONDUCTED EMISSIONS to EN 55015 : 2006

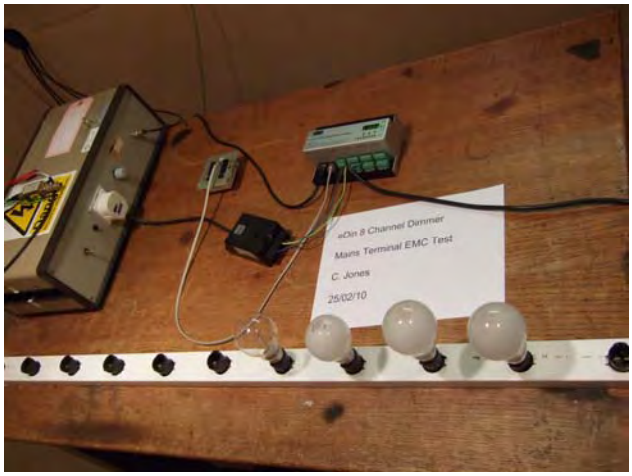
Tested by: C Jones

Test date: 25/02/2010

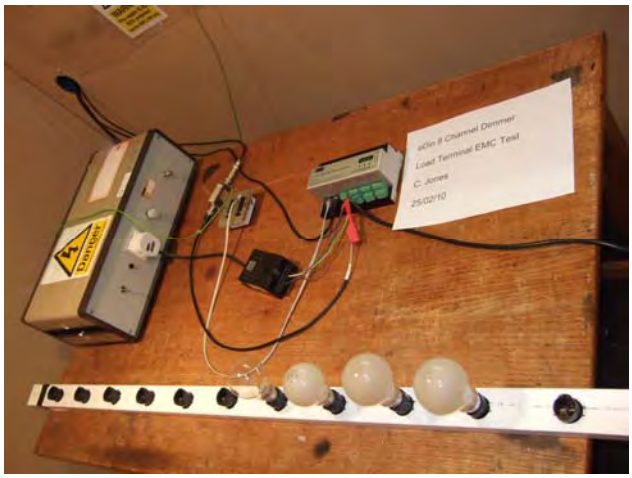
Test equipment used: Advantest R3621 Spectrum Analyser
Chase MN2050 LISN
Tungsten Load Lamps 500W

Model tested: DIN-02-08 / EVO-SGP-55

Test set up: The tests were conducted to circuit 1, with the unit set to 50% (load lamps dimmed to 50%)



Mains Terminals

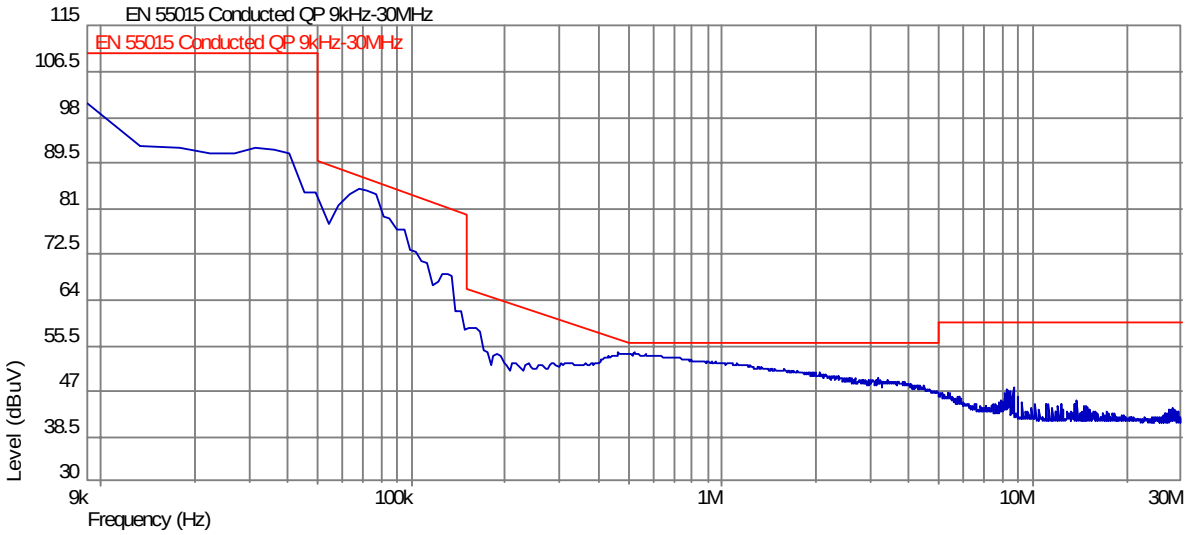


Load terminals

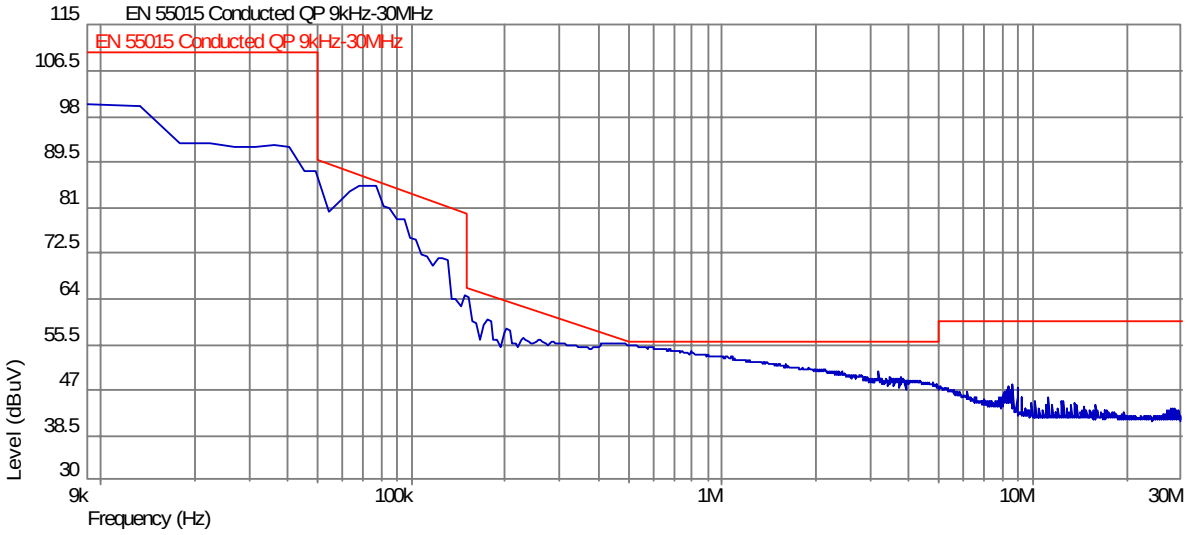
Test result: Pass

Test results

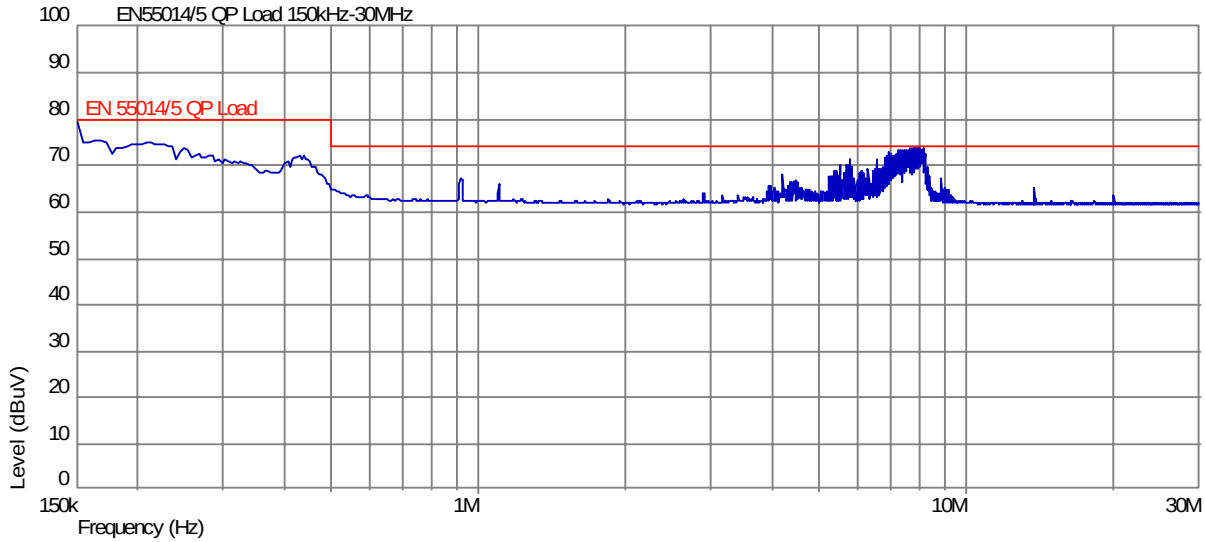
Mains terminals - Live coupling:



Mains terminals - Neutral coupling:



Load terminals:



Note:

The peak at 909 kHz is an ambient, due to the local transmitter at Brookmans Park, approximately 10 miles from the test site, Ware, SG12 9AD. This transmitter radiates 150kW at 909kHz. The extract below is from the BBC website.

BBC Radio Five Live (MW)

	Frequency (kHz)	Power	Grid ref
Barrow	693	1kW	SD218707
Bexhill	693	1kW	TQ744080
Bournemouth	909	0.25kW	SZ070926
Brighton	693	1kW	TQ234051
Brookmans Park	**909**	**150kW**	**TL259050**
Burghead	693	25kW	NJ125685
Clevedon	909	50kW	ST400697
Droitwich	693	150kW	SO929663
Enniskillen	693	1kW	H232457
Exeter	909	1kW	SX931881
Fareham	909	1kW	SU546058
Folkestone	693	1kW	TR255389
Lisnagarvey	909	10kW	J258619
Londonderry	909	1kW	C404176
Moorside Edge	909	200kW	SE070154
Postwick	693	10kW	TG303086
Redmoss	693	1kW	NJ942024
Redruth MF	909	2kW	SW709403
Stagshaw	693	50kW	NY986709
Start Point	693	50kW	SX814378
Tywyn	990	1kW	SH581004
Westerglen	909	50kW	NS868773
Whitehaven	909	1kW	NX974172

LIMITS OF HARMONIC CURRENT EMISSIONS TO EN 61000-3-2 : 2006

Tested by:	P Carter
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-02-08 /EVO-SGP-55
Test result:	Pass. The product is exempt from this standard (Clause 7), as it is an independent dimmer for incandescent lamps with a rated power less than or equal to 1kW.

LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER to EN 61000-3-3 : 2008

Tested by:	C Jones
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-02-08 / EVO-SGP-55
Test result:	Pass. The product is exempt from this standard (Clause 6), as this product is unlikely to produce significant voltage fluctuations or flicker due to the circuits low power consumption and the fact that the load does not change. In addition, it should be noted that the product does not contain a mechanical switch or relay, that load level changes would be infrequent and incorporate a fade time.

IMMUNITY to EN 61547 : 2009

Tested by:	A Hayllar	C Jones	C Jones
Test date:	28/07/2010	30/07/2010	05/08/2010

Test equipment used:

Schaffner Best Plus EMC Immunity Test System
EN 61000-4-3 – Chase antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier
EN 61000-4-6 (Mains) – Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.
EN 61000-3-6 (MBus): Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination

Model tested: DIN-02-08 / EVO-SGP-55

Test set up: Circuit 1 was connected to a 25W tungsten load, with unit set to pre-programmed scene (load lamps dimmed to 50%)

Test result: Pass

The performance criterion for each test was taken from Table 14

Test results

Electrostatic Discharges to EN 61000-4-2

Performance criterion: B

Test Method: Ten discharges per test were applied to various locations on the fascia plate of the unit under test

Results:

Test No.	Voltage	Discharge Type	Result
1	+4000V	Contact	Pass
2	-4000V	Contact	Pass
3	+8000V	Air	Pass
4	-8000V	Air	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency Electromagnetic Fields to EN 61000-4-3

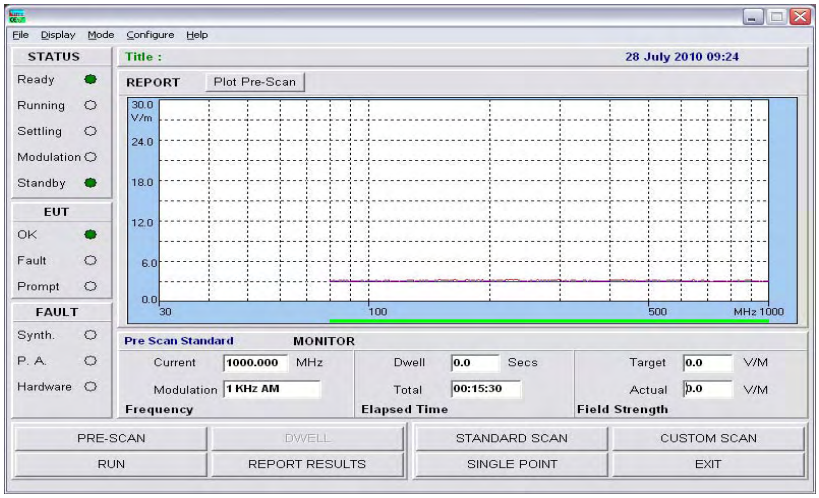
Performance criterion: A

Test Method: The test was carried out using a Chase Antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier in a ferrite lined anechoic chamber. Pre-scan and 4 complete scans were conducted with both vertical and horizontal polarization with the UUT in the front, right, left and rear turntable position with respect to the antenna

Results:

Limits	Coupling	Result
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated horizontal	Pass
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated vertical	Pass

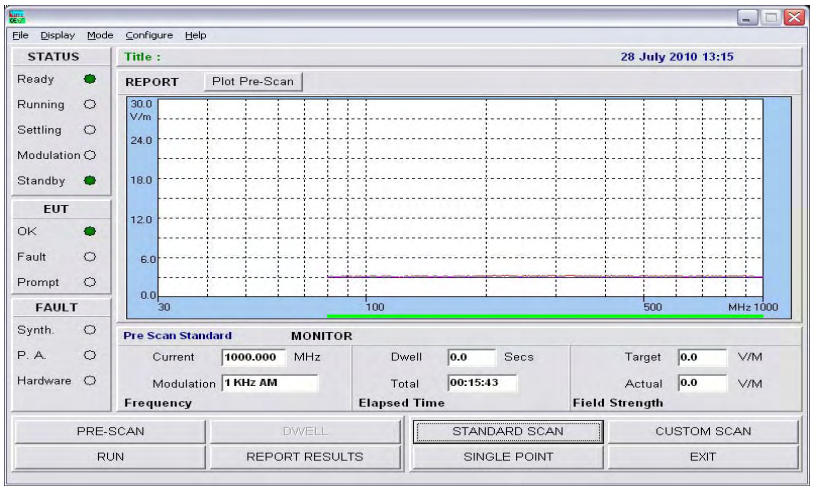
Observations: Pre-scan horizontal polarization



Four full horizontal scans were conducted with the UUT in the front, 90 degree right, 90 degree left and 180 degree rear turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
10:21::20	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0F	12	7F	B9	0B	05	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	Start radiated test
12:57::39*** Bus Packet Framing Error ***												Test complete, power OFF

Pre-scan vertical polarization



Four full vertical scans were conducted with the UUT in the 180 degree rear, 90 degree right, 90 degree left and front turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
13:18::38	3	12	1	1	0C	3	1C	6	6E	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Pressed	
13:18::38	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	
13:18::38	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	11	19	7F	81	B9	0B	0	Pack 1 (MI) > Dev 6 (ID=0x1fcff0b5)	Set passcode settings	
13:18::38	4	1	10	11	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	12	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	13	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	14	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::39	3	12	3	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Released	
13:18::39	3	12	4	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Inactive	Start radiated test
15:47::14*** Bus Packet Framing Error ***												Test complete, power OFF

No change of state observed.

Overall result: Pass

Fast Transients (Burst) to EN 61000-4-4

Performance criterion: B

Test Method: Bursts of 75 spikes at 5kHz were applied to the unit under test with a repetition rate of 300mS and an overall test duration of 2 minutes

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	External	Asynchronous	Pass
2	-500V	External	Asynchronous	Pass
3	+1000V	L	Zero crossing (0°)	Pass
4	+1000V	L	Peak (90°)	Pass
5	+1000V	N	Zero crossing (0°)	Pass
6	+1000V	N	Peak (90°)	Pass
7	+1000V	PE	Zero crossing (0°)	Pass
8	+1000V	PE	Peak (90°)	Pass
9	+1000V	L+N	Zero crossing (0°)	Pass
10	+1000V	L+N	Peak (90°)	Pass
11	+1000V	L+PE	Zero crossing (0°)	Pass
12	+1000V	L+PE	Peak (90°)	Pass
13	+1000V	N+PE	Zero crossing (0°)	Pass
14	+1000V	N+PE	Peak (90°)	Pass
15	+1000V	L+N+PE	Zero crossing (0°)	Pass
16	+1000V	L+N+PE	Peak (90°)	Pass
17	-1000V	L	Zero crossing (0°)	Pass
18	-1000V	L	Peak (90°)	Pass
19	-1000V	N	Zero crossing (0°)	Pass
20	-1000V	N	Peak (90°)	Pass
21	-1000V	PE	Zero crossing (0°)	Pass
22	-1000V	PE	Peak (90°)	Pass
23	-1000V	L+N	Zero crossing (0°)	Pass
24	-1000V	L+N	Peak (90°)	Pass
25	-1000V	L+PE	Zero crossing (0°)	Pass
26	-1000V	L+PE	Peak (90°)	Pass
27	-1000V	N+PE	Zero crossing (0°)	Pass
28	-1000V	N+PE	Peak (90°)	Pass
29	-1000V	L+N+PE	Zero crossing (0°)	Pass
30	-1000V	L+N+PE	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Surges to EN 61000-4-5

Performance criterion: C

Test Method: Five voltage surges were applied per test with a 20 second interval between pulses

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+1000V	L+N	Zero crossing (0°)	Pass
2	+1000V	L+N	Peak (90°)	Pass
3	-1000V	L+N	Zero crossing (0°)	Pass
4	-1000V	L+N	Peak (90°)	Pass
5	+2000V	L+E	Zero crossing (0°)	Pass
6	+2000V	L+E	Peak (90°)	Pass
7	-2000V	L+E	Zero crossing (0°)	Pass
8	-2000V	L+E	Peak (90°)	Pass
9	+2000V	N+E	Zero crossing (0°)	Pass
10	+2000V	N+E	Peak (90°)	Pass
11	-2000V	N+E	Zero crossing (0°)	Pass
12	-2000V	N+E	Peak (90°)	Pass
13	+2000V	L+N+E	Zero crossing (0°)	Pass
14	+2000V	L+N+E	Peak (90°)	Pass
15	-2000V	L+N+E	Zero crossing (0°)	Pass
16	-2000V	L+N+E	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency, Common Mode, to EN 61000-4-6

Performance criterion: A

Test Method: Mains Input: The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.

Control Input (MBus): The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination.

Results:

Limits	Coupling	Result
9k to 80MHz, 3V, 80% AM (1KHz)	CDN-M3 to Mains Input	Pass
9k to 80MHz, 3V, 80% AM (1KHz)	Current Transformer to Bus Cable	Pass

Observations: No change of state observed.

Overall result: Pass

Power Frequency Magnetic Fields to EN 61000-4-8

Performance criterion: A

Test Method: Test is not applicable, as the product contains no components that are susceptible to magnetic fields at the specified frequency range and test level

Overall result: Pass

Voltage Dips and Interruptions to EN 61000-4-11

Performance criterion: C (30%) / B (100%)

Test Method: 10 dips and interruptions with a voltage reduction and period as per the table below were applied to the unit under test with a 20 second interval between interruptions

Results:

Test No.	Test level	Duration	Result
1	70% (+ve polarity)	200mS	Pass
2	70% (-ve polarity)	200mS	Pass
3	0% (+ve polarity)	10mS	Pass
4	0% (-ve polarity)	10mS	Pass

Observations: No change of state observed upon completion of the tests

Overall result: Pass

DIN-03-04 / EVO-SGP-55

CONDUCTED EMISSIONS to EN 55015 : 2006

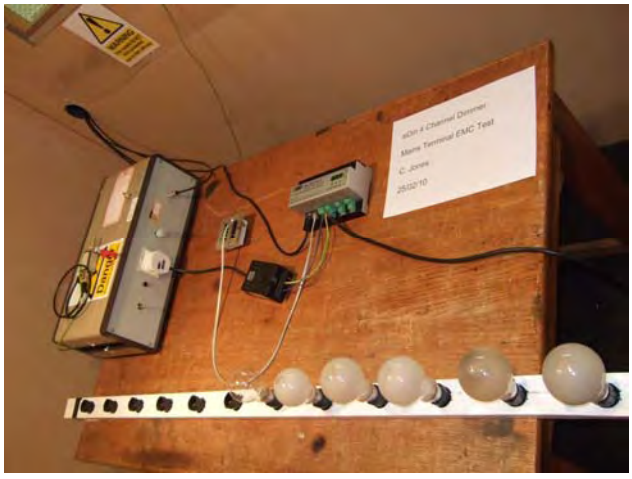
Tested by: C Jones

Test date: 25/02/2010

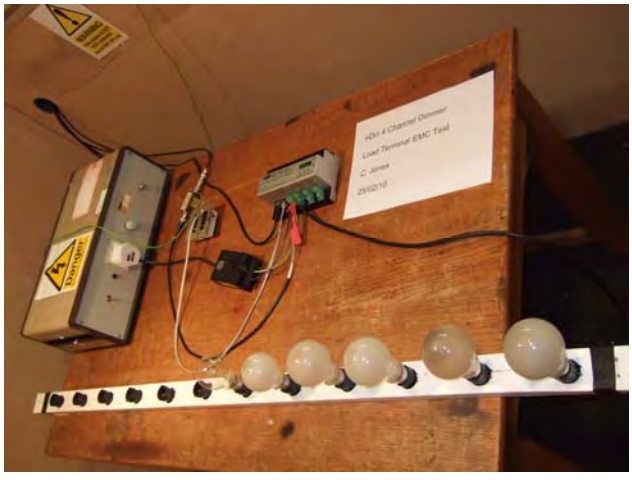
Test equipment used: Advantest R3621 Spectrum Analyser
Chase MN2050 LISN
Tungsten Load Lamps 750W

Model tested: DIN-03-04 / EVO-SGP-55

Test set up: The tests were conducted to circuit 1, with the unit set to 50% (load lamps dimmed to 50%)



Mains Terminals

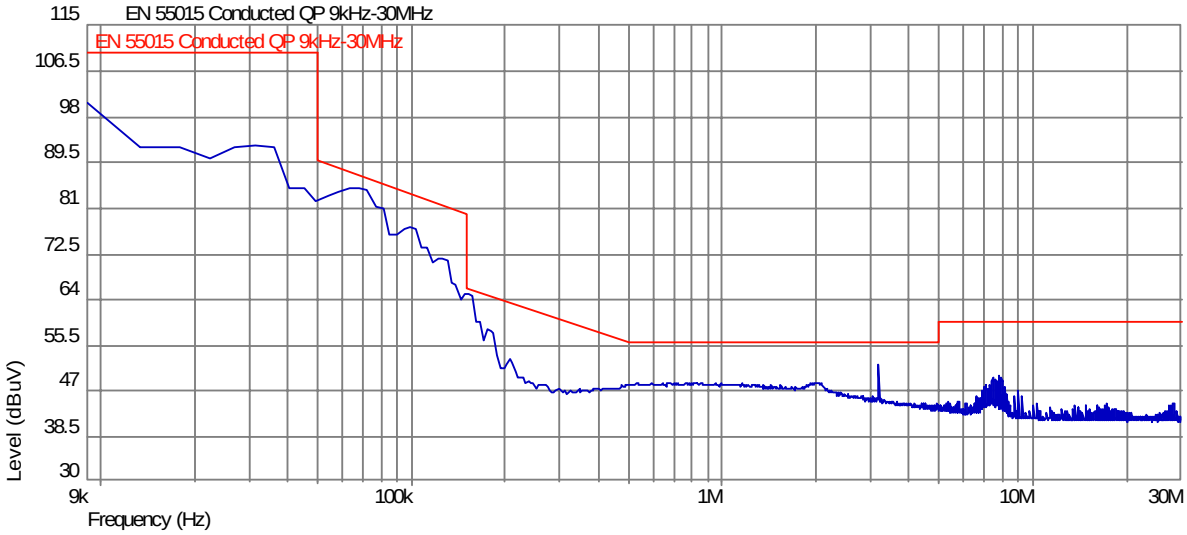


Load terminals

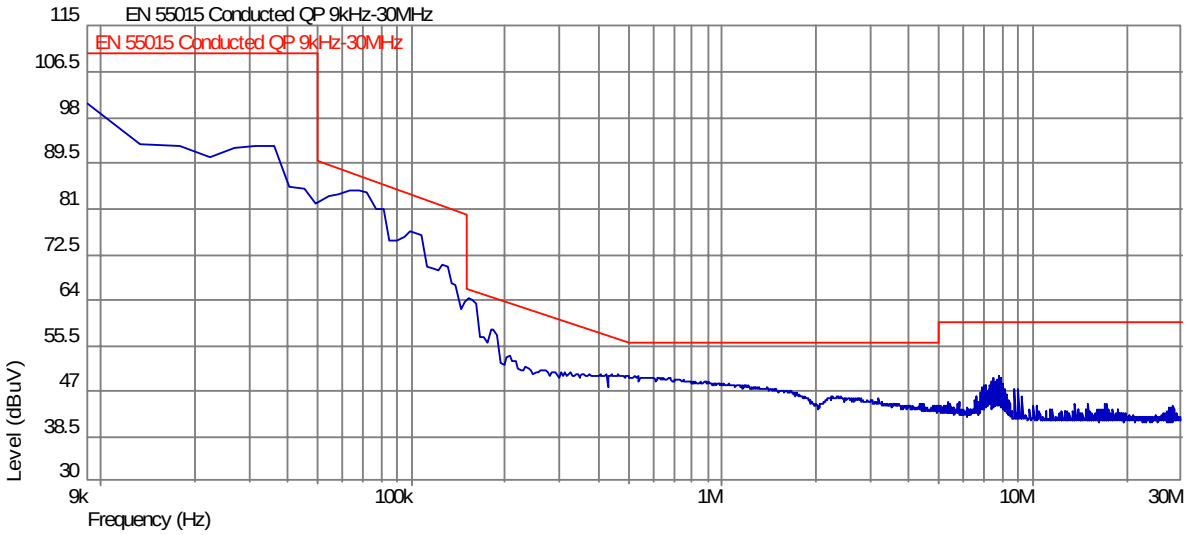
Test result: Pass

Test results

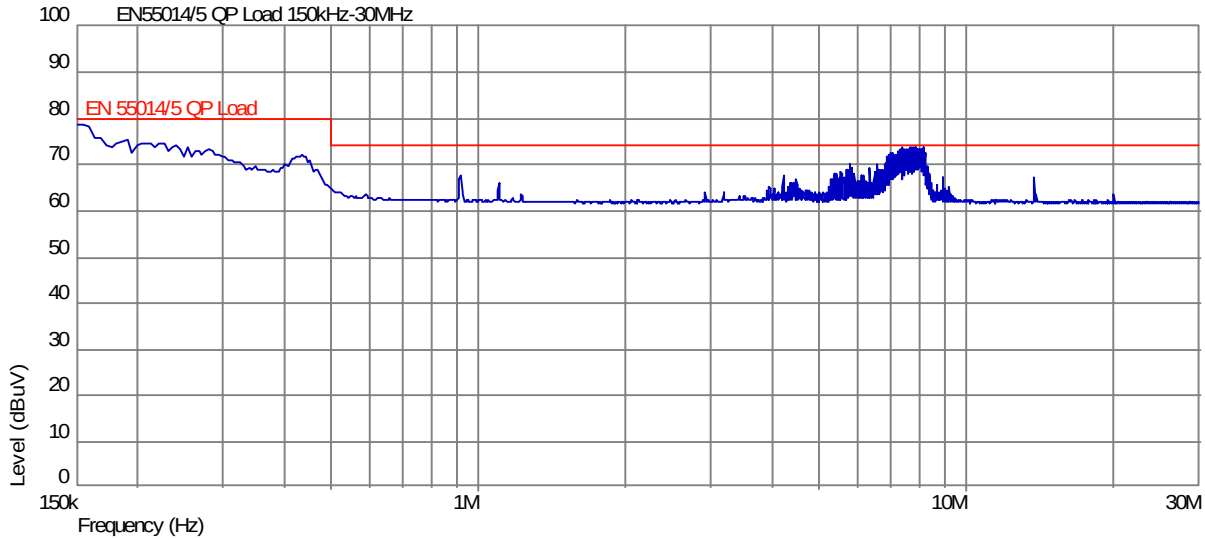
Mains terminals - Live coupling:



Mains terminals - Neutral coupling:



Load terminals:



Note:

The peak at 909 kHz is an ambient, due to the local transmitter at Brookmans Park, approximately 10 miles from the test site, Ware, SG12 9AD. This transmitter radiates 150kW at 909kHz. The extract below is from the BBC website.

BBC Radio Five Live (MW)

	Frequency (kHz)	Power	Grid ref
Barrow	693	1kW	SD218707
Bexhill	693	1kW	TQ744080
Bournemouth	909	0.25kW	SZ070926
Brighton	693	1kW	TQ234051
Brookmans Park	**909**	**150kW**	**TL259050**
Burghead	693	25kW	NJ125685
Clevedon	909	50kW	ST400697
Droitwich	693	150kW	SO929663
Enniskillen	693	1kW	H232457
Exeter	909	1kW	SX931881
Fareham	909	1kW	SU546058
Folkestone	693	1kW	TR255389
Lisnagarvey	909	10kW	J258619
Londonderry	909	1kW	C404176
Moorside Edge	909	200kW	SE070154
Postwick	693	10kW	TG303086
Redmoss	693	1kW	NJ942024
Redruth MF	909	2kW	SW709403
Stagshaw	693	50kW	NY986709
Start Point	693	50kW	SX814378
Tywyn	990	1kW	SH581004
Westerglen	909	50kW	NS868773
Whitehaven	909	1kW	NX974172

LIMITS OF HARMONIC CURRENT EMISSIONS TO EN 61000-3-2 : 2006

Tested by:	P Carter
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-03-04 / EVO-SGP-55
Test result:	Pass. The product is exempt from this standard (Clause 7), as it is an independent dimmer for incandescent lamps with a rated power less than or equal to 1kW.

LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER to EN 61000-3-3 : 2008

Tested by:	C Jones
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-03-04 / EVO-SGP-55
Test result:	Pass. The product is exempt from this standard (Clause 6), as this product is unlikely to produce significant voltage fluctuations or flicker due to the circuits low power consumption and the fact that the load does not change. In addition, it should be noted that the product does not contain a mechanical switch or relay, that load level changes would be infrequent and incorporate a fade time.

IMMUNITY to EN 61547 : 2009

Tested by:	A Hayllar	C Jones	C Jones
Test date:	28/07/2010	30/07/2010	05/08/2010

Test equipment used:

Schaffner Best Plus EMC Immunity Test System
EN 61000-4-3 – Chase antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier
EN 61000-4-6 (Mains) – Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.
EN 61000-3-6 (MBus): Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination

Model tested: DIN-03-04 / EVO-SGP-55

Test set up: Circuit 1 was connected to a 25W tungsten load, with unit set to pre-programmed scene (load lamps dimmed to 50%)

Test result: Pass

The performance criterion for each test was taken from Table 14

Test results

Electrostatic Discharges to EN 61000-4-2

Performance criterion: B

Test Method: Ten discharges per test were applied to various locations on the fascia plate of the unit under test

Results:

Test No.	Voltage	Discharge Type	Result
1	+4000V	Contact	Pass
2	-4000V	Contact	Pass
3	+8000V	Air	Pass
4	-8000V	Air	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency Electromagnetic Fields to EN 61000-4-3

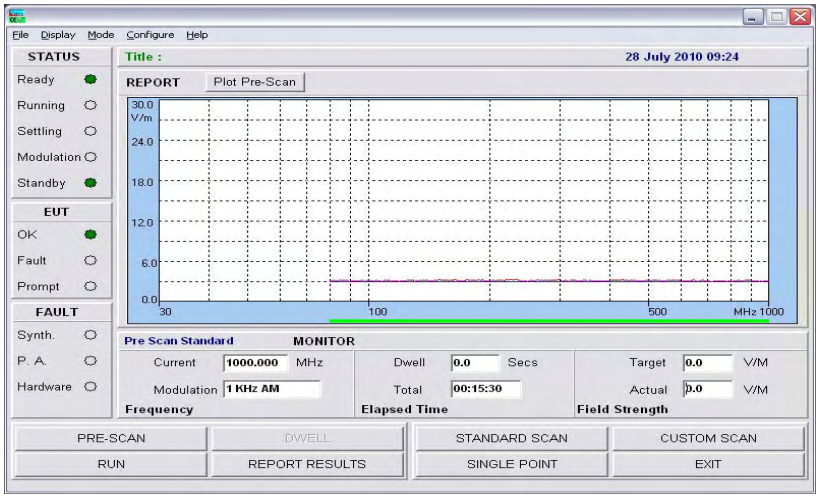
Performance criterion: A

Test Method: The test was carried out using a Chase Antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier in a ferrite lined anechoic chamber. Pre-scan and 4 complete scans were conducted with both vertical and horizontal polarization with the UUT in the front, right, left and rear turntable position with respect to the antenna

Results:

Limits	Coupling	Result
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated horizontal	Pass
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated vertical	Pass

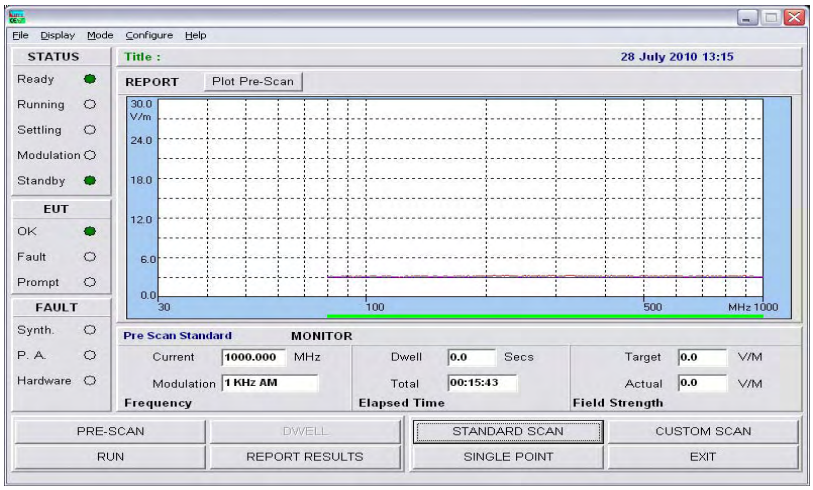
Observations: Pre-scan horizontal polarization



Four full horizontal scans were conducted with the UUT in the front, 90 degree right, 90 degree left and 180 degree rear turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
10:21::20	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0F	12	7F	B9	0B	05	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	Start radiated test
12:57::39*** Bus Packet Framing Error ***												Test complete, power OFF

Pre-scan vertical polarization



Four full vertical scans were conducted with the UUT in the 180 degree rear, 90 degree right, 90 degree left and front turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
13:18::38	3	12	1	1	0C	3	1C	6	6E	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Pressed	
13:18::38	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	
13:18::38	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	11	19	7F	81	B9	0B	0	Pack 1 (MI) > Dev 6 (ID=0x1fcff0b5)	Set passcode settings	
13:18::38	4	1	10	11	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	12	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	13	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	14	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::39	3	12	3	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Released	
13:18::39	3	12	4	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Inactive	Start radiated test
15:47::14*** Bus Packet Framing Error ***												Test complete, power OFF

No change of state observed.

Overall result: Pass

Fast Transients (Burst) to EN 61000-4-4

Performance criterion: B

Test Method: Bursts of 75 spikes at 5kHz were applied to the unit under test with a repetition rate of 300mS and an overall test duration of 2 minutes

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	External	Asynchronous	Pass
2	-500V	External	Asynchronous	Pass
3	+1000V	L	Zero crossing (0°)	Pass
4	+1000V	L	Peak (90°)	Pass
5	+1000V	N	Zero crossing (0°)	Pass
6	+1000V	N	Peak (90°)	Pass
7	+1000V	PE	Zero crossing (0°)	Pass
8	+1000V	PE	Peak (90°)	Pass
9	+1000V	L+N	Zero crossing (0°)	Pass
10	+1000V	L+N	Peak (90°)	Pass
11	+1000V	L+PE	Zero crossing (0°)	Pass
12	+1000V	L+PE	Peak (90°)	Pass
13	+1000V	N+PE	Zero crossing (0°)	Pass
14	+1000V	N+PE	Peak (90°)	Pass
15	+1000V	L+N+PE	Zero crossing (0°)	Pass
16	+1000V	L+N+PE	Peak (90°)	Pass
17	-1000V	L	Zero crossing (0°)	Pass
18	-1000V	L	Peak (90°)	Pass
19	-1000V	N	Zero crossing (0°)	Pass
20	-1000V	N	Peak (90°)	Pass
21	-1000V	PE	Zero crossing (0°)	Pass
22	-1000V	PE	Peak (90°)	Pass
23	-1000V	L+N	Zero crossing (0°)	Pass
24	-1000V	L+N	Peak (90°)	Pass
25	-1000V	L+PE	Zero crossing (0°)	Pass
26	-1000V	L+PE	Peak (90°)	Pass
27	-1000V	N+PE	Zero crossing (0°)	Pass
28	-1000V	N+PE	Peak (90°)	Pass
29	-1000V	L+N+PE	Zero crossing (0°)	Pass
30	-1000V	L+N+PE	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Surges to EN 61000-4-5

Performance criterion: C

Test Method: Five voltage surges were applied per test with a 20 second interval between pulses

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+1000V	L+N	Zero crossing (0°)	Pass
2	+1000V	L+N	Peak (90°)	Pass
3	-1000V	L+N	Zero crossing (0°)	Pass
4	-1000V	L+N	Peak (90°)	Pass
5	+2000V	L+E	Zero crossing (0°)	Pass
6	+2000V	L+E	Peak (90°)	Pass
7	-2000V	L+E	Zero crossing (0°)	Pass
8	-2000V	L+E	Peak (90°)	Pass
9	+2000V	N+E	Zero crossing (0°)	Pass
10	+2000V	N+E	Peak (90°)	Pass
11	-2000V	N+E	Zero crossing (0°)	Pass
12	-2000V	N+E	Peak (90°)	Pass
13	+2000V	L+N+E	Zero crossing (0°)	Pass
14	+2000V	L+N+E	Peak (90°)	Pass
15	-2000V	L+N+E	Zero crossing (0°)	Pass
16	-2000V	L+N+E	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency, Common Mode, to EN 61000-4-6

Performance criterion: A

Test Method: Mains Input: The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.

Control Input (MBus): The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination.

Results:

Limits	Coupling	Result
9k to 80MHz, 3V, 80% AM (1KHz)	CDN-M3 to Mains Input	Pass
9k to 80MHz, 3V, 80% AM (1KHz)	Current Transformer to Bus Cable	Pass

Observations: No change of state observed.

Overall result: Pass

Power Frequency Magnetic Fields to EN 61000-4-8

Performance criterion: A

Test Method: Test is not applicable, as the product contains no components that are susceptible to magnetic fields at the specified frequency range and test level

Overall result: Pass

Voltage Dips and Interruptions to EN 61000-4-11

Performance criterion: C (30%) / B (100%)

Test Method: 10 dips and interruptions with a voltage reduction and period as per the table below were applied to the unit under test with a 20 second interval between interruptions

Results:

Test No.	Test level	Duration	Result
1	70% (+ve polarity)	200mS	Pass
2	70% (-ve polarity)	200mS	Pass
3	0% (+ve polarity)	10mS	Pass
4	0% (-ve polarity)	10mS	Pass

Observations: No change of state observed upon completion of the tests

Overall result: Pass

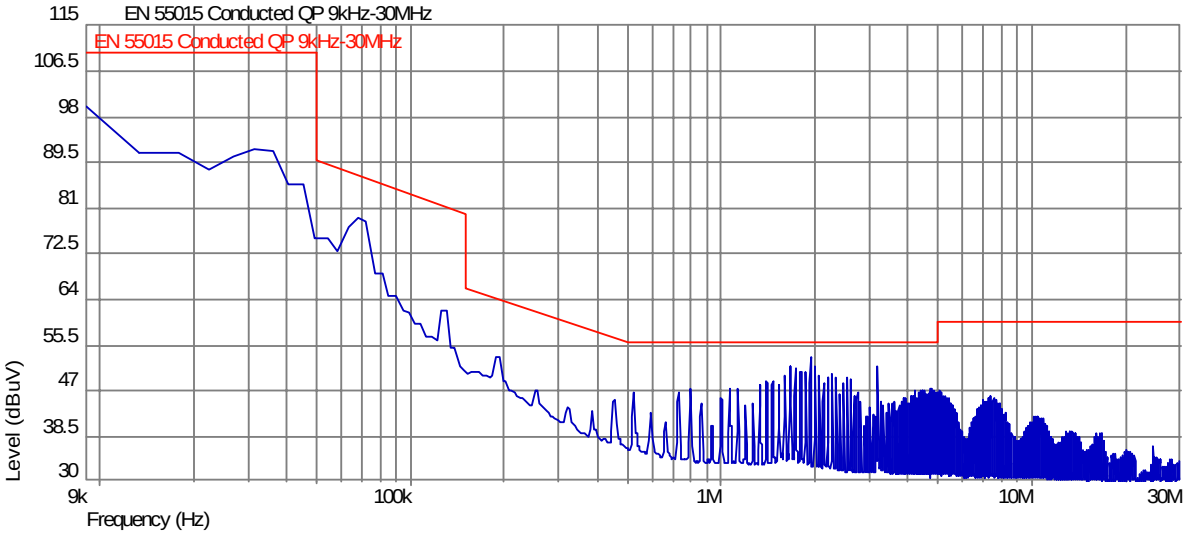
DIN-PSU-24V

CONDUCTED EMISSIONS to EN 55015 : 2006

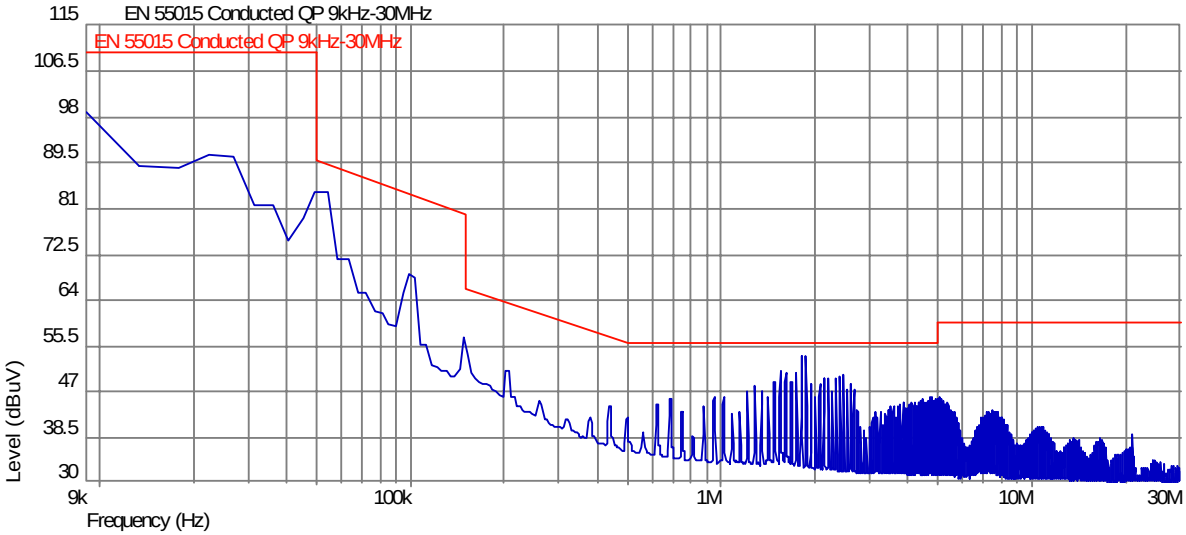
Tested by:	C Jones
Test date:	01/03/2010
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN
Model tested:	DIN-PSU-24V
Test set up:	The tests were conducted at the maximum rated load (24V at 800mA)
Test result:	Pass

Test results

Mains terminals - Live coupling:

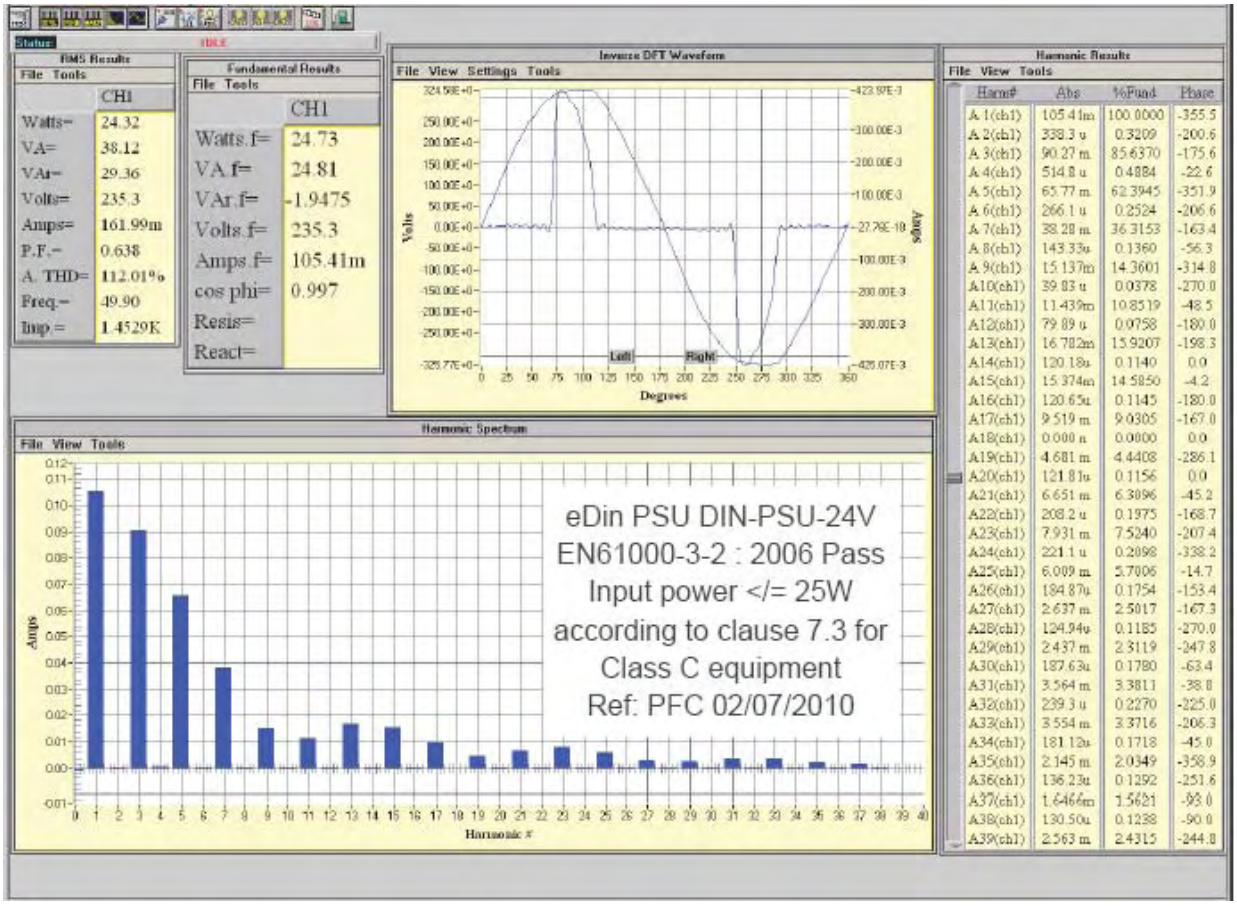


Mains terminals - Neutral coupling:



LIMITS OF HARMONIC CURRENT EMISSIONS TO EN 61000-3-2 : 2006

Tested by:	P Carter
Test date:	02/07/2010
Test equipment used:	None required
Model tested:	DIN-PSU-24V (800mA)
Test result:	Pass. The product is compliant to the standard (clause 7.3 Class C </=25W).



LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER to EN 61000-3-3 : 2008

Tested by:	C Jones
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-PSU-24V
Test result:	Pass. The product is exempt from this standard (Clause 6), as it is unlikely to produce significant voltage fluctuations or flicker due to the circuits low power consumption and the fact that the load does not change. In addition, it should be noted that the product does not contain a mechanical switch or relay, will not be switched frequently and contains inrush current limiting circuitry.

IMMUNITY to EN 61547 : 2009

Tested by:	A Hayllar	C Jones	C Jones
Test date:	28/07/2010	30/07/2010	13/08/2010

Test equipment used:

Schaffner Best Plus EMC Immunity Test System
EN 61000-4-3 – Chase antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier
EN 61000-4-6 (Mains) – Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.
EN 61000-3-6 (MBus): Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination

Model tested: DIN-PSU-24V / DIN-NPU-00-01 / DIN-INT-00-08 / DIN-RP-05-04 / EVO-SGP-55

Test set up: DIN-PSU-24V powering DIN-NPU-00-01, DIN-INT-00-08, DIN-RP-05-04 and EVO-SGP-55 via MBus. Tests conducted with DIN-RP-05-04 circuits 1 to 4 connected to 25W tungsten loads in ‘stand-alone’ mode with scene 3 selected (all relays closed/on)

Test result: Pass

The performance criterion for each test was taken from Table 14

Test results

Electrostatic Discharges to EN 61000-4-2

Performance criterion: B

Test Method: Ten discharges per test were applied to various locations on the fascia plate of the unit under test

Results:

Test No.	Voltage	Discharge Type	Result
1	+4000V	Contact	Pass
2	-4000V	Contact	Pass
3	+8000V	Air	Pass
4	-8000V	Air	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency Electromagnetic Fields to EN 61000-4-3

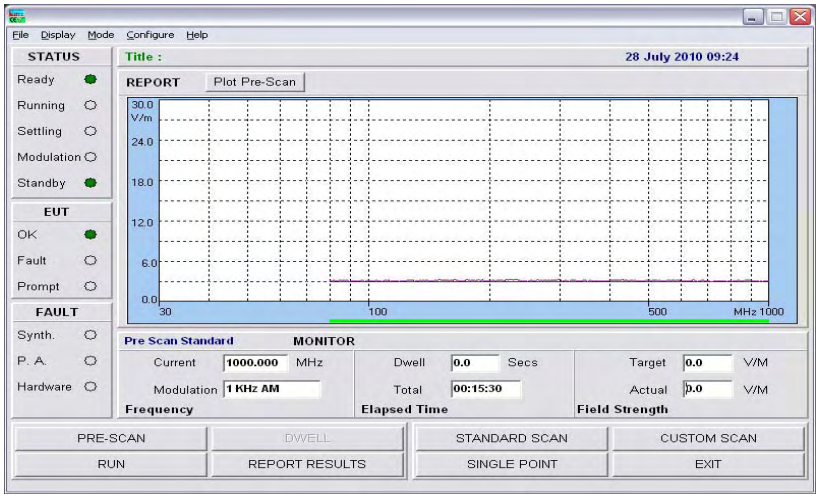
Performance criterion: A

Test Method: The test was carried out using a Chase Antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier in a ferrite lined anechoic chamber. Pre-scan and 4 complete scans were conducted with both vertical and horizontal polarization with the UUT in the front, right, left and rear turntable position with respect to the antenna

Results:

Limits	Coupling	Result
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated horizontal	Pass
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated vertical	Pass

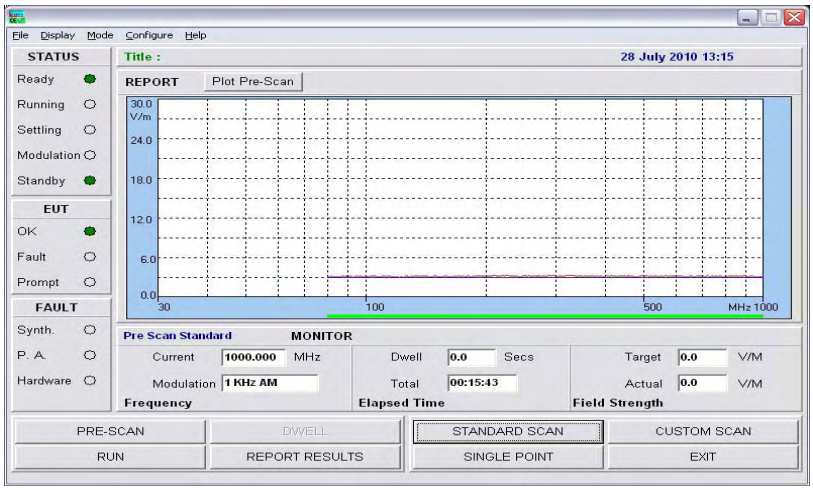
Observations: Pre-scan horizontal polarization



Four full horizontal scans were conducted with the UUT in the front, 90 degree right, 90 degree left and 180 degree rear turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
10:21::20	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0F	12	7F	B9	0B	05	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	Start radiated test
12:57::39*** Bus Packet Framing Error ***												Test complete, power OFF

Pre-scan vertical polarization



Four full vertical scans were conducted with the UUT in the 180 degree rear, 90 degree right, 90 degree left and front turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
13:18::38	3	12	1	1	0C	3	1C	6	6E	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Pressed	
13:18::38	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	
13:18::38	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	11	19	7F	81	B9	0B	0	Pack 1 (MI) > Dev 6 (ID=0x1fcff0b5)	Set passcode settings	
13:18::38	4	1	10	11	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	12	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	13	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	14	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::39	3	12	3	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Released	
13:18::39	3	12	4	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Inactive	Start radiated test
15:47::14*** Bus Packet Framing Error ***												Test complete, power OFF

No change of state observed.

Overall result: Pass

Fast Transients (Burst) to EN 61000-4-4

Performance criterion: B

Test Method: Bursts of 75 spikes at 5kHz were applied to the unit under test with a repetition rate of 300mS and an overall test duration of 2 minutes

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	External	Asynchronous	Pass
2	-500V	External	Asynchronous	Pass
3	+1000V	L	Zero crossing (0°)	Pass
4	+1000V	L	Peak (90°)	Pass
5	+1000V	N	Zero crossing (0°)	Pass
6	+1000V	N	Peak (90°)	Pass
7	+1000V	PE	Zero crossing (0°)	Pass
8	+1000V	PE	Peak (90°)	Pass
9	+1000V	L+N	Zero crossing (0°)	Pass
10	+1000V	L+N	Peak (90°)	Pass
11	+1000V	L+PE	Zero crossing (0°)	Pass
12	+1000V	L+PE	Peak (90°)	Pass
13	+1000V	N+PE	Zero crossing (0°)	Pass
14	+1000V	N+PE	Peak (90°)	Pass
15	+1000V	L+N+PE	Zero crossing (0°)	Pass
16	+1000V	L+N+PE	Peak (90°)	Pass
17	-1000V	L	Zero crossing (0°)	Pass
18	-1000V	L	Peak (90°)	Pass
19	-1000V	N	Zero crossing (0°)	Pass
20	-1000V	N	Peak (90°)	Pass
21	-1000V	PE	Zero crossing (0°)	Pass
22	-1000V	PE	Peak (90°)	Pass
23	-1000V	L+N	Zero crossing (0°)	Pass
24	-1000V	L+N	Peak (90°)	Pass
25	-1000V	L+PE	Zero crossing (0°)	Pass
26	-1000V	L+PE	Peak (90°)	Pass
27	-1000V	N+PE	Zero crossing (0°)	Pass
28	-1000V	N+PE	Peak (90°)	Pass
29	-1000V	L+N+PE	Zero crossing (0°)	Pass
30	-1000V	L+N+PE	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Surges to EN 61000-4-5

Performance criterion: C

Test Method: Five voltage surges were applied per test with a 20 second interval between pulses

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	L+N	Zero crossing (0°)	Pass
2	+500V	L+N	Peak (90°)	Pass
3	-500V	L+N	Zero crossing (0°)	Pass
4	-500V	L+N	Peak (90°)	Pass
5	+1000V	L+E	Zero crossing (0°)	Pass
6	+1000V	L+E	Peak (90°)	Pass
7	-1000V	L+E	Zero crossing (0°)	Pass
8	-1000V	L+E	Peak (90°)	Pass
9	+1000V	N+E	Zero crossing (0°)	Pass
10	+1000V	N+E	Peak (90°)	Pass
11	-1000V	N+E	Zero crossing (0°)	Pass
12	-1000V	N+E	Peak (90°)	Pass
13	+1000V	L+N+E	Zero crossing (0°)	Pass
14	+1000V	L+N+E	Peak (90°)	Pass
15	-1000V	L+N+E	Zero crossing (0°)	Pass
16	-1000V	L+N+E	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency, Common Mode, to EN 61000-4-6

Performance criterion: A

Test Method: Mains Input: The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.

Control Input (MBus): The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination.

Results:

Limits	Coupling	Result
9k to 80MHz, 3V, 80% AM (1KHz)	CDN-M3 to Mains Input	Pass
9k to 80MHz, 3V, 80% AM (1KHz)	Current Transformer to Bus Cable	Pass

Observations: No change of state observed.

Overall result: Pass

Power Frequency Magnetic Fields to EN 61000-4-8

Performance criterion: A

Test Method: Test is not applicable, as the product contains no components that are susceptible to magnetic fields at the specified frequency range and test level

Overall result: Pass

Voltage Dips and Interruptions to EN 61000-4-11

Performance criterion: C (30%) / B (100%)

Test Method: 10 dips and interruptions with a voltage reduction and period as per the table below were applied to the unit under test with a 20 second interval between interruptions

Results:

Test No.	Test level	Duration	Result
1	70% (+ve polarity)	200mS	Pass
2	70% (-ve polarity)	200mS	Pass
3	0% (+ve polarity)	10mS	Pass
4	0% (-ve polarity)	10mS	Pass

Observations: No change of state observed upon completion of the tests

Overall result: Pass

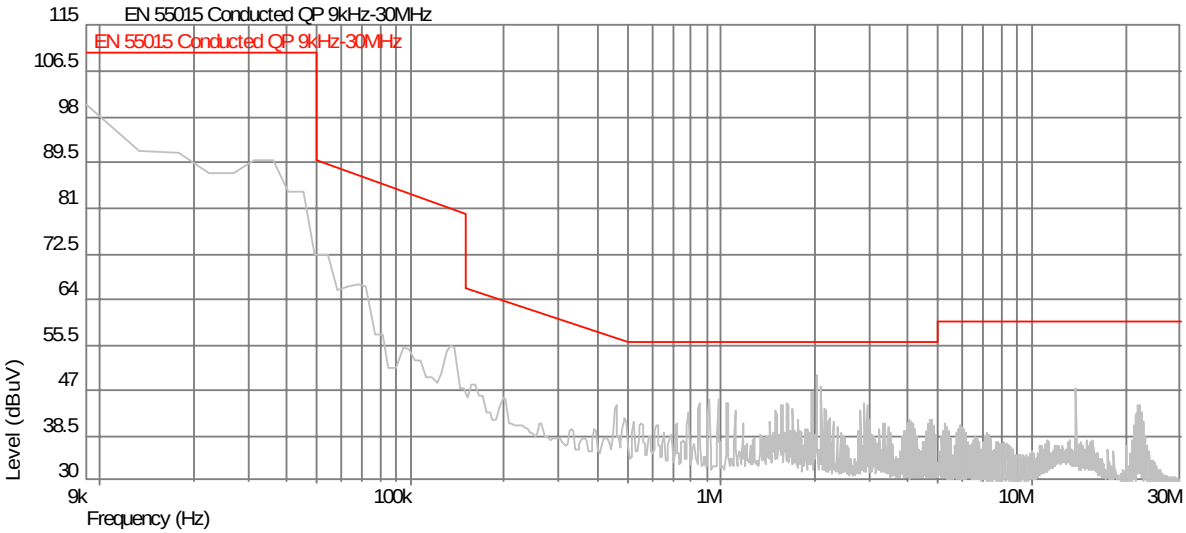
DIN-NPU-00-01 / DIN-INT-00-08 / DIN-RP-05-04 / EVO-SGP-55

CONDUCTED EMISSIONS to EN 55015 : 2006

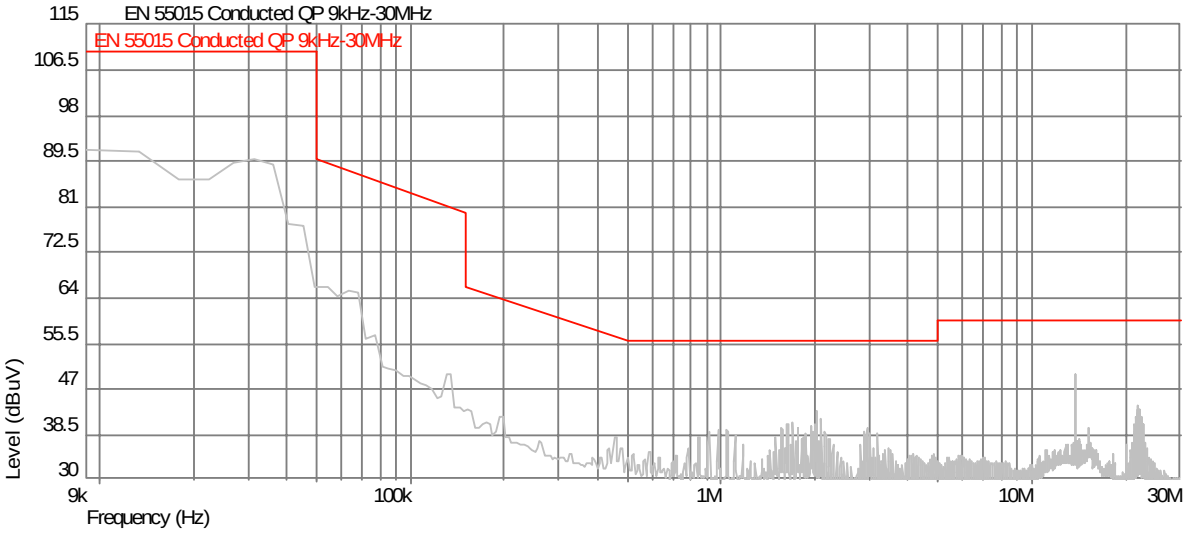
Tested by:	P Hodgskin
Test date:	18/11/2009
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN Tungsten Load Lamps
Model tested:	DIN-NPU-00-01 / DIN-INT-00-08 / DIN-RP-05-04, DIN-PSU-24V / EVO-SGP-55
Test set up:	DIN-PSU-24V powering DIN-NPU-00-01, DIN-INT-00-08, DIN-RP-05-04 and EVO-SGP-55 via MBus. Tests conducted with DIN-RP-05-04 circuits 1 to 4 connected to 25W tungsten loads in 'stand-alone' mode with scene 3 selected (all relays closed/lamps on)
Test result:	Pass

Test results

Mains terminals - Live coupling:



Mains terminals - Neutral coupling:



LIMITS OF HARMONIC CURRENT EMISSIONS TO EN 61000-3-2 : 2006

Tested by:	P Carter
Test date:	16/07/2010
Test equipment used:	None required
Model tested:	DIN-INT-00-08 / DIN-NPU-00-01 / DIN-RP-05-04 / EVO-SGP-55
Test result:	Pass. The product is compliant to the standard (clause 7.3 Class C </=25W). The DIN-RP-05-04 volt free relay contacts will not produce harmonic currents

LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER to EN 61000-3-3 : 2008

Tested by:	C Jones
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-INT-00-08 / DIN-NPU-00-01 / DIN-RP-05-04 / EVO-SGP-55
Test result:	Pass. The product is exempt from this standard (Clause 6), as this product is unlikely to produce significant voltage fluctuations or flicker due to the circuits low power consumption and infrequent load change.

IMMUNITY to EN 61547 : 2009

Tested by:	A Hayllar	C Jones	C Jones
Test date:	28/07/2010	30/07/2010	18/08/2010

Test equipment used:

Schaffner Best Plus EMC Immunity Test System
EN 61000-4-3 – Chase antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier
EN 61000-4-6 (Mains) – Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.
EN 61000-3-6 (MBus): Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination

Model tested: DIN-NPU-00-01 / DIN-INT-00-08 / DIN-RP-05-04 / DIN-PSU-24V / EVO-SGP-55

Test set up: DIN-PSU-24V powering DIN-NPU-00-01, DIN-INT-00-08, DIN-RP-05-04 and EVO-SGP-55 via MBus. Tests conducted with DIN-RP-05-04 circuits 1 to 4 connected to 25W tungsten loads in ‘stand-alone’ mode with scene 3 selected (all relays closed/lamps on). DIN-NPU-00-01 moniored by PC connected to RS232 input.

Test result: Pass

The performance criterion for each test was taken from Table 14

Test results

Electrostatic Discharges to EN 61000-4-2

Performance criterion: B

Test Method: Ten discharges per test were applied to various locations on the fascia plate of the unit under test

Results:

Test No.	Voltage	Discharge Type	Result
1	+4000V	Contact	Pass
2	-4000V	Contact	Pass
3	+8000V	Air	Pass
4	-8000V	Air	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency Electromagnetic Fields to EN 61000-4-3

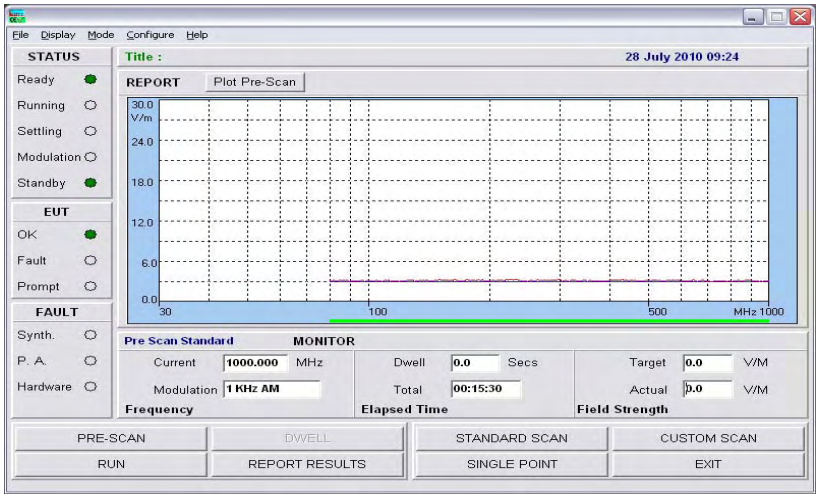
Performance criterion: A

Test Method: The test was carried out using a Chase Antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier in a ferrite lined anechoic chamber. Pre-scan and 4 complete scans were conducted with both vertical and horizontal polarization with the UUT in the front, right, left and rear turntable position with respect to the antenna

Results:

Limits	Coupling	Result
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated horizontal	Pass
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated vertical	Pass

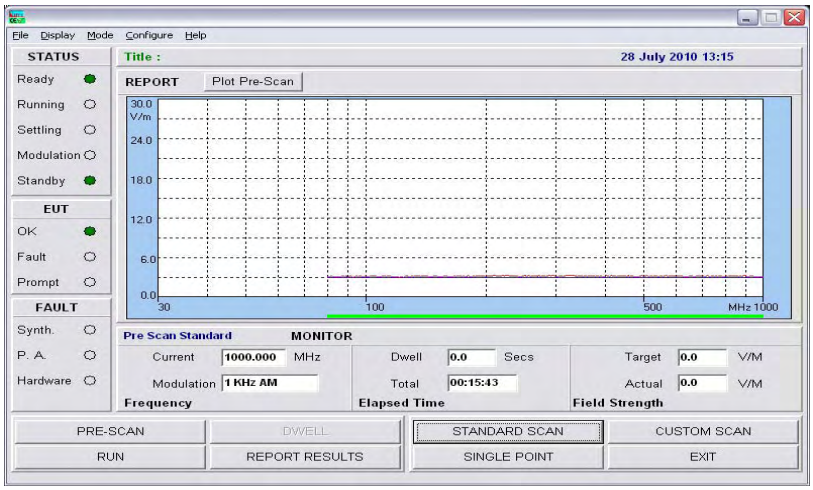
Observations: Pre-scan horizontal polarization



Four full horizontal scans were conducted with the UUT in the front, 90 degree right, 90 degree left and 180 degree rear turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
10:21::20	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0F	12	7F	B9	0B	05	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	Start radiated test
12:57::39*** Bus Packet Framing Error ***												Test complete, power OFF

Pre-scan vertical polarization



Four full vertical scans were conducted with the UUT in the 180 degree rear, 90 degree right, 90 degree left and front turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
13:18::38	3	12	1	1	0C	3	1C	6	6E	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Pressed	
13:18::38	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	
13:18::38	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	11	19	7F	81	B9	0B	0	Pack 1 (MI) > Dev 6 (ID=0x1fcff0b5)	Set passcode settings	
13:18::38	4	1	10	11	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	12	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	13	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	14	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::39	3	12	3	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Released	
13:18::39	3	12	4	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Inactive	Start radiated test
15:47::14*** Bus Packet Framing Error ***												Test complete, power OFF

No change of state observed.

Overall result: Pass

Fast Transients (Burst) to EN 61000-4-4

Performance criterion: B

Test Method: Bursts of 75 spikes at 5kHz were applied to the unit under test with a repetition rate of 300mS and an overall test duration of 2 minutes

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	External	Asynchronous	Pass
2	-500V	External	Asynchronous	Pass
3	+1000V	L	Zero crossing (0°)	Pass
4	+1000V	L	Peak (90°)	Pass
5	+1000V	N	Zero crossing (0°)	Pass
6	+1000V	N	Peak (90°)	Pass
7	+1000V	PE	Zero crossing (0°)	Pass
8	+1000V	PE	Peak (90°)	Pass
9	+1000V	L+N	Zero crossing (0°)	Pass
10	+1000V	L+N	Peak (90°)	Pass
11	+1000V	L+PE	Zero crossing (0°)	Pass
12	+1000V	L+PE	Peak (90°)	Pass
13	+1000V	N+PE	Zero crossing (0°)	Pass
14	+1000V	N+PE	Peak (90°)	Pass
15	+1000V	L+N+PE	Zero crossing (0°)	Pass
16	+1000V	L+N+PE	Peak (90°)	Pass
17	-1000V	L	Zero crossing (0°)	Pass
18	-1000V	L	Peak (90°)	Pass
19	-1000V	N	Zero crossing (0°)	Pass
20	-1000V	N	Peak (90°)	Pass
21	-1000V	PE	Zero crossing (0°)	Pass
22	-1000V	PE	Peak (90°)	Pass
23	-1000V	L+N	Zero crossing (0°)	Pass
24	-1000V	L+N	Peak (90°)	Pass
25	-1000V	L+PE	Zero crossing (0°)	Pass
26	-1000V	L+PE	Peak (90°)	Pass
27	-1000V	N+PE	Zero crossing (0°)	Pass
28	-1000V	N+PE	Peak (90°)	Pass
29	-1000V	L+N+PE	Zero crossing (0°)	Pass
30	-1000V	L+N+PE	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Surges to EN 61000-4-5

Performance criterion: C

Test Method: Five voltage surges were applied per test with a 20 second interval between pulses

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	L+N	Zero crossing (0°)	Pass
2	+500V	L+N	Peak (90°)	Pass
3	-500V	L+N	Zero crossing (0°)	Pass
4	-500V	L+N	Peak (90°)	Pass
5	+1000V	L+E	Zero crossing (0°)	Pass
6	+1000V	L+E	Peak (90°)	Pass
7	-1000V	L+E	Zero crossing (0°)	Pass
8	-1000V	L+E	Peak (90°)	Pass
9	+1000V	N+E	Zero crossing (0°)	Pass
10	+1000V	N+E	Peak (90°)	Pass
11	-1000V	N+E	Zero crossing (0°)	Pass
12	-1000V	N+E	Peak (90°)	Pass
13	+1000V	L+N+E	Zero crossing (0°)	Pass
14	+1000V	L+N+E	Peak (90°)	Pass
15	-1000V	L+N+E	Zero crossing (0°)	Pass
16	-1000V	L+N+E	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency, Common Mode, to EN 61000-4-6

Performance criterion: A

Test Method: Mains Input: The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.

Control Input (MBus): The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination.

Results:

Limits	Coupling	Result
9k to 80MHz, 3V, 80% AM (1KHz)	CDN-M3 to Mains Input	Pass
9k to 80MHz, 3V, 80% AM (1KHz)	Current Transformer to Bus Cable	Pass

Observations: No change of state observed.

Overall result: Pass

Power Frequency Magnetic Fields to EN 61000-4-8

Performance criterion: A

Test Method: Test is not applicable, as the product contains no components that are susceptible to magnetic fields at the specified frequency range and test level

Overall result: Pass

Voltage Dips and Interruptions to EN 61000-4-11

Performance criterion: C (30%) / B (100%)

Test Method: 10 dips and interruptions with a voltage reduction and period as per the table below were applied to the unit under test with a 20 second interval between interruptions

Results:

Test No.	Test level	Duration	Result
1	70% (+ve polarity)	200mS	Pass
2	70% (-ve polarity)	200mS	Pass
3	0% (+ve polarity)	10mS	Pass
4	0% (-ve polarity)	10mS	Pass

Observations: No change of state observed upon completion of the tests

Overall result: Pass

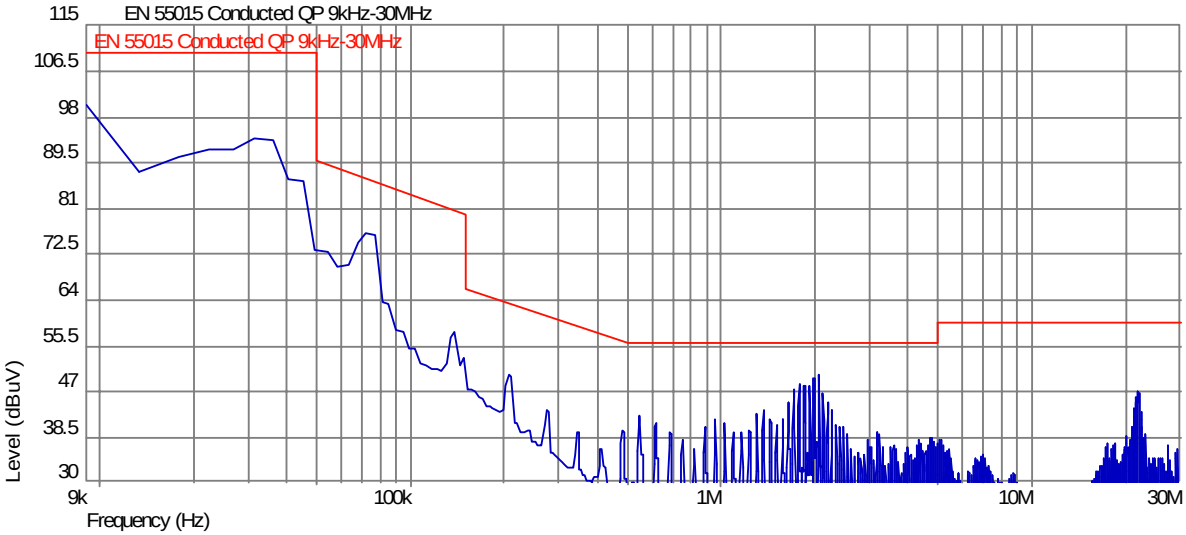
DIN-UBC-01-05

CONDUCTED EMISSIONS to EN 55015 : 2006

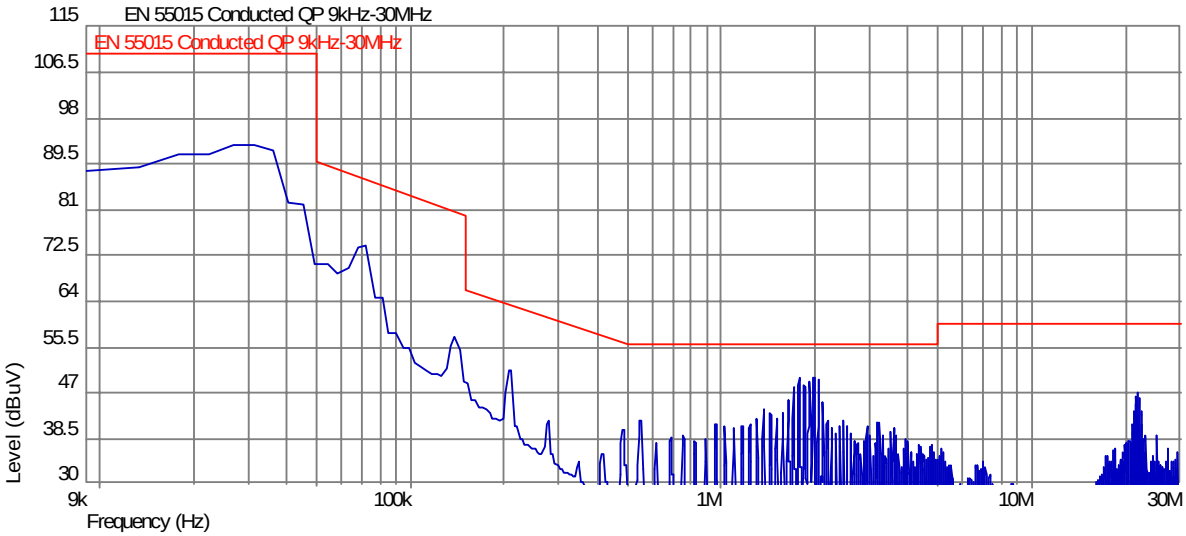
Tested by:	C Jones
Test date:	24/09/2010
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN
Model tested:	DIN-UBC-01-05
Test set up:	The tests were conducted at the maximum rated load (24V at 800mA)
Test result:	Pass

Test results

Mains terminals - Live coupling:

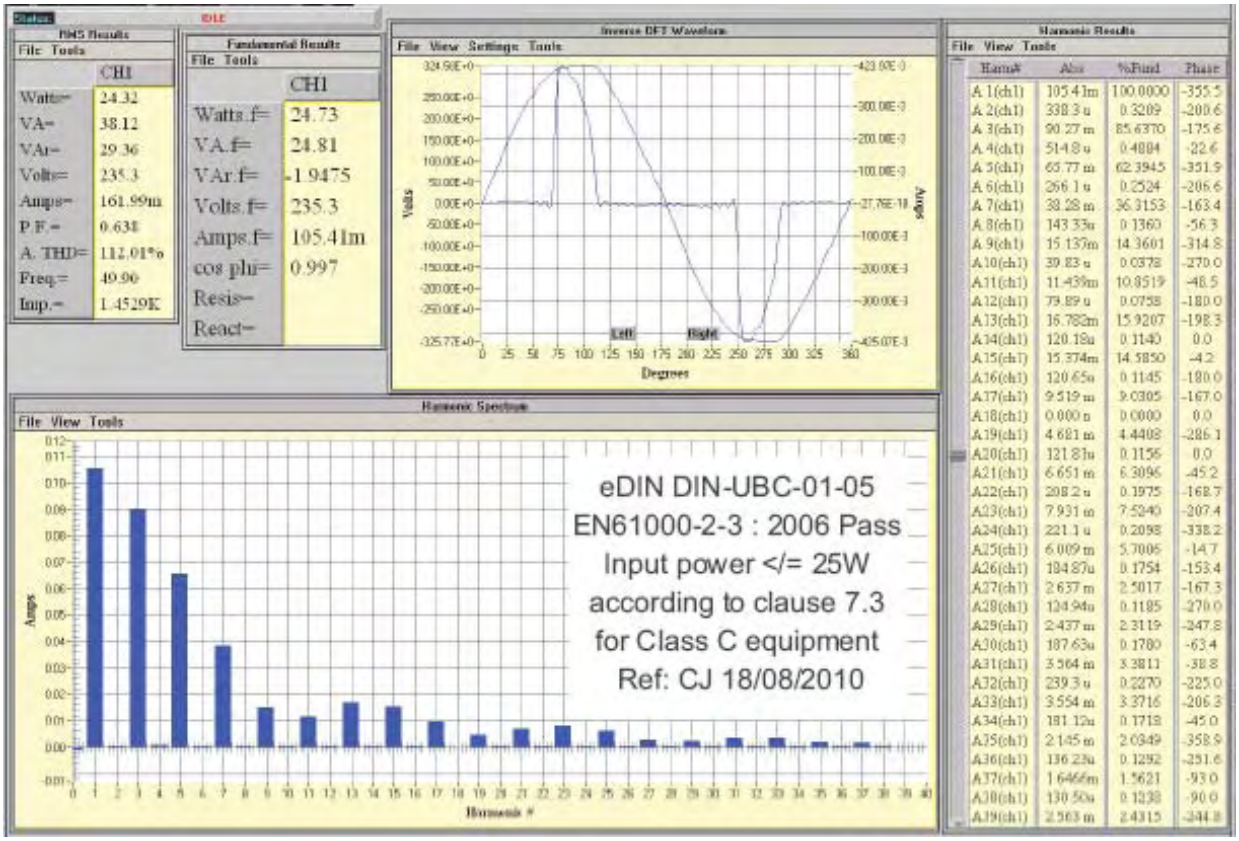


Mains terminals - Neutral coupling:



LIMITS OF HARMONIC CURRENT EMISSIONS TO EN 61000-3-2 : 2006

Tested by:	C Jones
Test date:	18/08/2010
Test equipment used:	None required
Model tested:	DIN-UBC-01-05 (800mA)
Test result:	Pass. The product is compliant to the standard (clause 7.3 Class C </=25W).



LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER to EN 61000-3-3 : 2008

Tested by:	C Jones
Test date:	28/06/2010
Test equipment used:	None required
Model tested:	DIN-UBC-01-05
Test result:	Pass. The product is exempt from this standard (Clause 6), as it is unlikely to produce significant voltage fluctuations or flicker due to the circuits low power consumption and the fact that the load does not change. In addition, it should be noted that the product does not contain a mechanical switch or relay, will not be switched frequently and contains inrush current limiting circuitry.

IMMUNITY to EN 61547 : 2009

Tested by:	A Hayllar	C Jones	C Jones
Test date:	28/07/2010	30/07/2010	13/08/2010

Test equipment used:

Schaffner Best Plus EMC Immunity Test System
EN 61000-4-3 – Chase antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier
EN 61000-4-6 (Mains) – Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.
EN 61000-3-6 (MBus): Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination

Model tested: DIN-UBC-01-05 / DIN-PSU-24V / EVO-SGP-55

Test set up: DIN-PSU-24V powering EVO-SGP-55 via MBus connected to DIN-UBC-01-05 with DALI dimmable fluorescent ballast. 'Stand-alone' mode scene 3 selected (fluorescent lamp at 50%)

Test result: Pass

The performance criterion for each test was taken from Table 14

Test results

Electrostatic Discharges to EN 61000-4-2

Performance criterion: B

Test Method: Ten discharges per test were applied to various locations on the fascia plate of the unit under test

Results:

Test No.	Voltage	Discharge Type	Result
1	+4000V	Contact	Pass
2	-4000V	Contact	Pass
3	+8000V	Air	Pass
4	-8000V	Air	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency Electromagnetic Fields to EN 61000-4-3

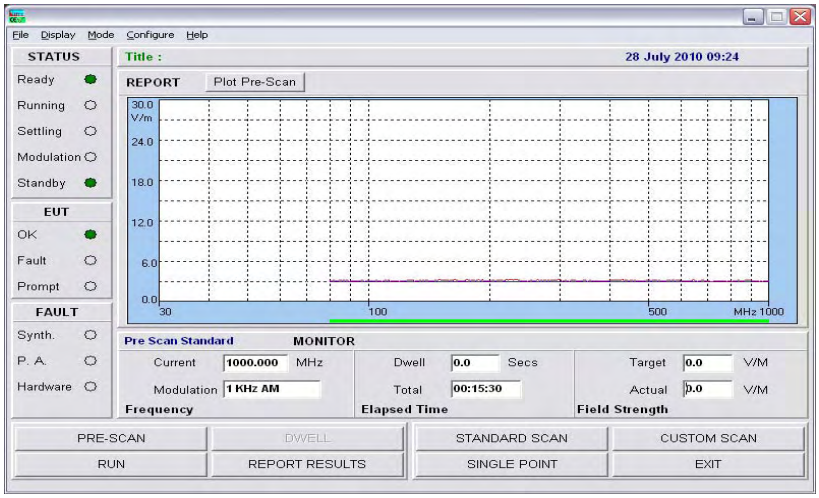
Performance criterion: A

Test Method: The test was carried out using a Chase Antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier in a ferrite lined anechoic chamber. Pre-scan and 4 complete scans were conducted with both vertical and horizontal polarization with the UUT in the front, right, left and rear turntable position with respect to the antenna

Results:

Limits	Coupling	Result
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated horizontal	Pass
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated vertical	Pass

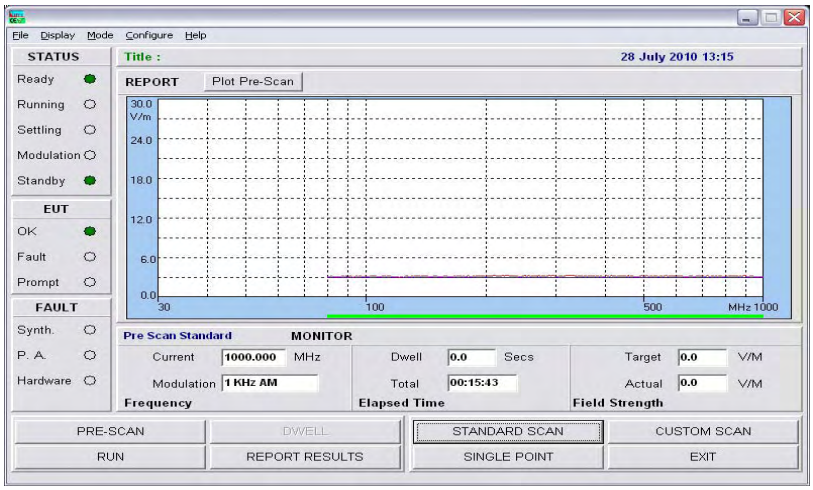
Observations: Pre-scan horizontal polarization



Four full horizontal scans were conducted with the UUT in the front, 90 degree right, 90 degree left and 180 degree rear turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
10:21::20	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0F	12	7F	B9	0B	05	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	Start radiated test
12:57::39*** Bus Packet Framing Error ***												Test complete, power OFF

Pre-scan vertical polarization



Four full vertical scans were conducted with the UUT in the 180 degree rear, 90 degree right, 90 degree left and front turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
13:18::38	3	12	1	1	0C	3	1C	6	6E	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Pressed	
13:18::38	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	
13:18::38	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	11	19	7F	81	B9	0B	0	Pack 1 (MI) > Dev 6 (ID=0x1fcff0b5)	Set passcode settings	
13:18::38	4	1	10	11	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	12	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	13	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	14	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::39	3	12	3	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Released	
13:18::39	3	12	4	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Inactive	Start radiated test
15:47::14*** Bus Packet Framing Error ***												Test complete, power OFF

No change of state observed.

Overall result: Pass

Fast Transients (Burst) to EN 61000-4-4

Performance criterion: B

Test Method: Bursts of 75 spikes at 5kHz were applied to the unit under test with a repetition rate of 300mS and an overall test duration of 2 minutes

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	External	Asynchronous	Pass
2	-500V	External	Asynchronous	Pass
3	+1000V	L	Zero crossing (0°)	Pass
4	+1000V	L	Peak (90°)	Pass
5	+1000V	N	Zero crossing (0°)	Pass
6	+1000V	N	Peak (90°)	Pass
7	+1000V	PE	Zero crossing (0°)	Pass
8	+1000V	PE	Peak (90°)	Pass
9	+1000V	L+N	Zero crossing (0°)	Pass
10	+1000V	L+N	Peak (90°)	Pass
11	+1000V	L+PE	Zero crossing (0°)	Pass
12	+1000V	L+PE	Peak (90°)	Pass
13	+1000V	N+PE	Zero crossing (0°)	Pass
14	+1000V	N+PE	Peak (90°)	Pass
15	+1000V	L+N+PE	Zero crossing (0°)	Pass
16	+1000V	L+N+PE	Peak (90°)	Pass
17	-1000V	L	Zero crossing (0°)	Pass
18	-1000V	L	Peak (90°)	Pass
19	-1000V	N	Zero crossing (0°)	Pass
20	-1000V	N	Peak (90°)	Pass
21	-1000V	PE	Zero crossing (0°)	Pass
22	-1000V	PE	Peak (90°)	Pass
23	-1000V	L+N	Zero crossing (0°)	Pass
24	-1000V	L+N	Peak (90°)	Pass
25	-1000V	L+PE	Zero crossing (0°)	Pass
26	-1000V	L+PE	Peak (90°)	Pass
27	-1000V	N+PE	Zero crossing (0°)	Pass
28	-1000V	N+PE	Peak (90°)	Pass
29	-1000V	L+N+PE	Zero crossing (0°)	Pass
30	-1000V	L+N+PE	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Surges to EN 61000-4-5

Performance criterion: C

Test Method: Five voltage surges were applied per test with a 20 second interval between pulses

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	L+N	Zero crossing (0°)	Pass
2	+500V	L+N	Peak (90°)	Pass
3	-500V	L+N	Zero crossing (0°)	Pass
4	-500V	L+N	Peak (90°)	Pass
5	+1000V	L+E	Zero crossing (0°)	Pass
6	+1000V	L+E	Peak (90°)	Pass
7	-1000V	L+E	Zero crossing (0°)	Pass
8	-1000V	L+E	Peak (90°)	Pass
9	+1000V	N+E	Zero crossing (0°)	Pass
10	+1000V	N+E	Peak (90°)	Pass
11	-1000V	N+E	Zero crossing (0°)	Pass
12	-1000V	N+E	Peak (90°)	Pass
13	+1000V	L+N+E	Zero crossing (0°)	Pass
14	+1000V	L+N+E	Peak (90°)	Pass
15	-1000V	L+N+E	Zero crossing (0°)	Pass
16	-1000V	L+N+E	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency, Common Mode, to EN 61000-4-6

Performance criterion: A

Test Method: Mains Input: The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.

Control Input (MBus): The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination.

Results:

Limits	Coupling	Result
9k to 80MHz, 3V, 80% AM (1KHz)	CDN-M3 to Mains Input	Pass
9k to 80MHz, 3V, 80% AM (1KHz)	Current Transformer to Bus Cable	Pass

Observations: No change of state observed.

Overall result: Pass

Power Frequency Magnetic Fields to EN 61000-4-8

Performance criterion: A

Test Method: Test is not applicable, as the product contains no components that are susceptible to magnetic fields at the specified frequency range and test level

Overall result: Pass

Voltage Dips and Interruptions to EN 61000-4-11

Performance criterion: C (30%) / B (100%)

Test Method: 10 dips and interruptions with a voltage reduction and period as per the table below were applied to the unit under test with a 20 second interval between interruptions

Results:

Test No.	Test level	Duration	Result
1	70% (+ve polarity)	200mS	Pass
2	70% (-ve polarity)	200mS	Pass
3	0% (+ve polarity)	10mS	Pass
4	0% (-ve polarity)	10mS	Pass

Observations: No change of state observed upon completion of the tests

Overall result: Pass

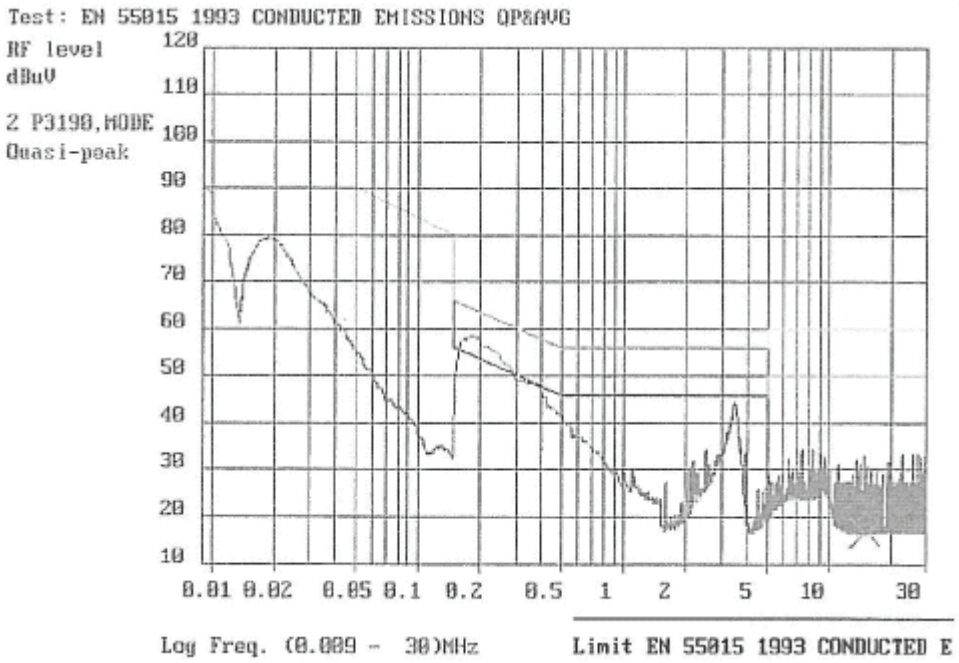
EVO-LCD-55

CONDUCTED EMISSIONS to EN 55015 : 2006

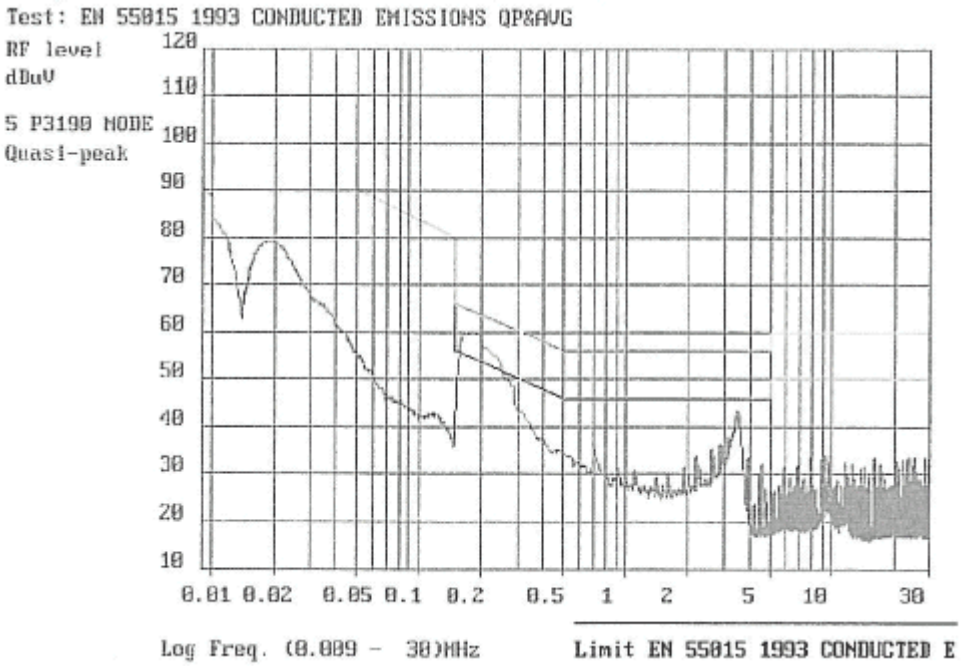
Tested by:	P Carter Chris Jones
Test dates:	02/04/2004 05/10/2006
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN Tungsten Load Lamps 2500W (10 Amp load) Tungsten Load Lamps 5000W (20 Amp load)
Model tested:	EVO-10-12 / EVO-20-06 / EVO-LCD-55 (these models are highest power in range and therefore worst case for the purpose of testing)
Test set up:	The tests were conducted to circuit 1, with the unit set to Scene 3 (default setting, load lamps dimmed to 50%) and Scene 4 (default setting, load lamps dimmed to 25%), whichever was worst case.
Test result:	Pass

Test results – EVO-10-12 and EVO-LCD-55

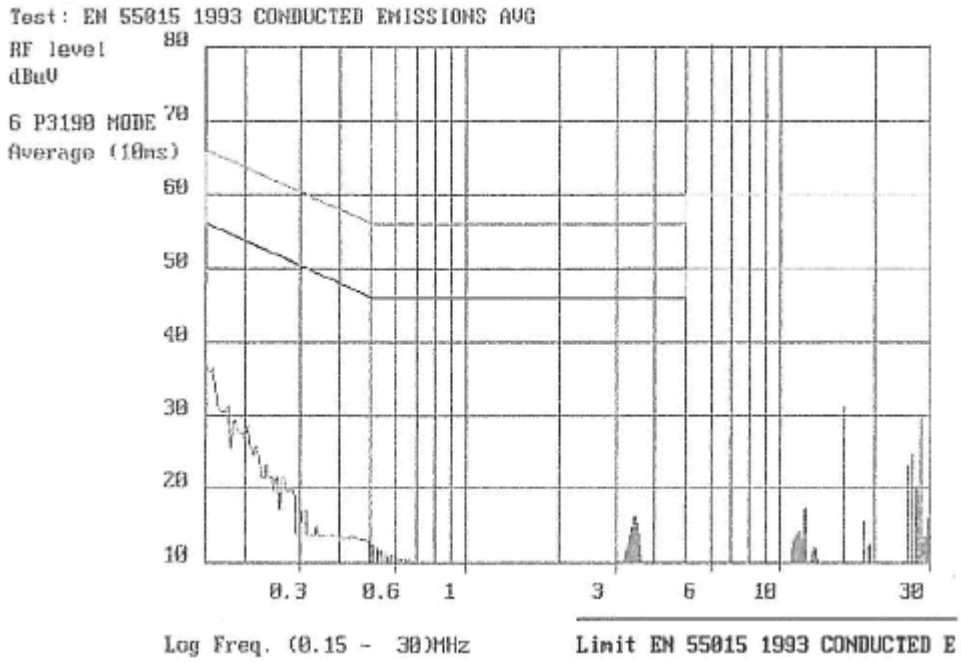
Mains terminals - Live coupling (25% worst case):



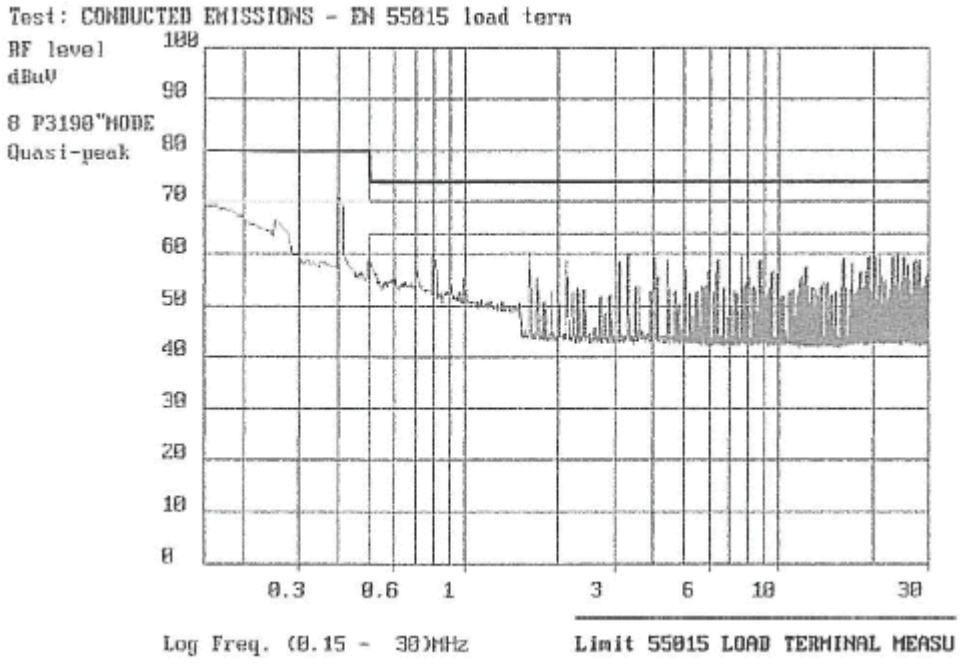
Mains terminals - Neutral coupling (25% worst case):



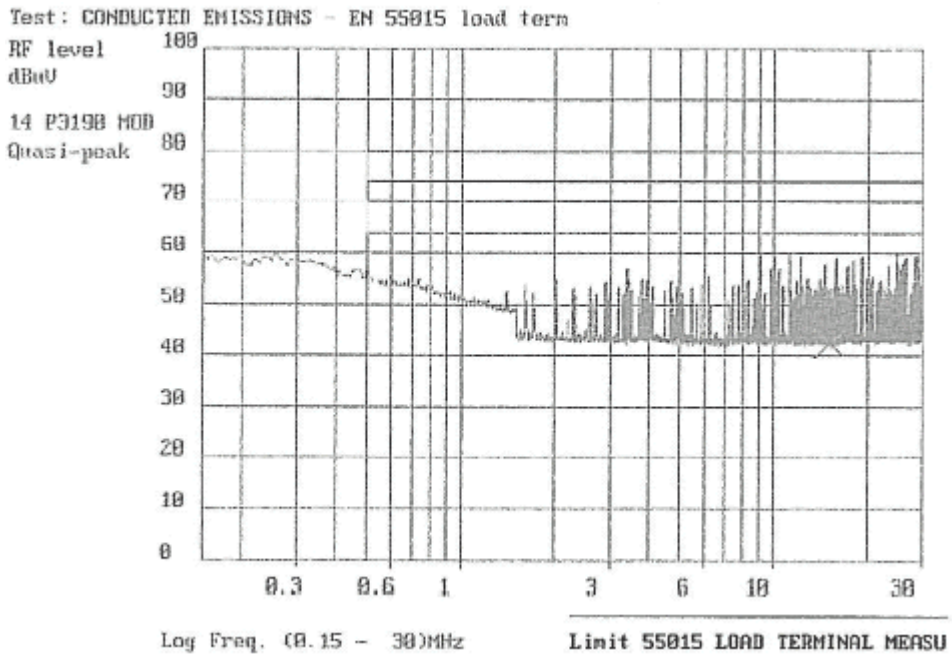
Mains terminals - Neutral coupling (25% worst case) Average Detector:



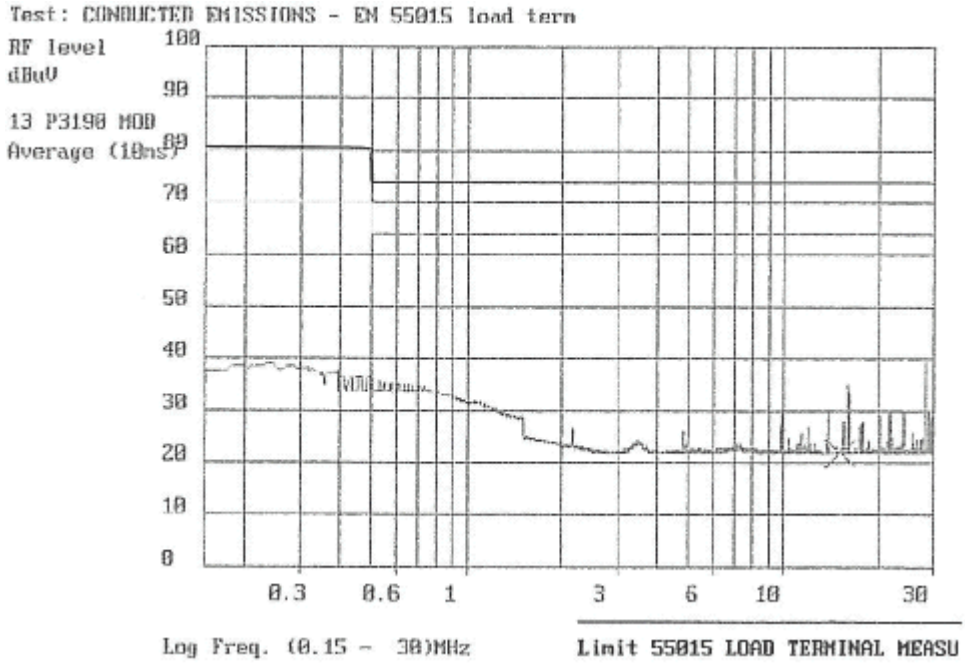
Load terminals - Live coupling (25% worst case):



Load terminals - Neutral coupling (25% worst case):

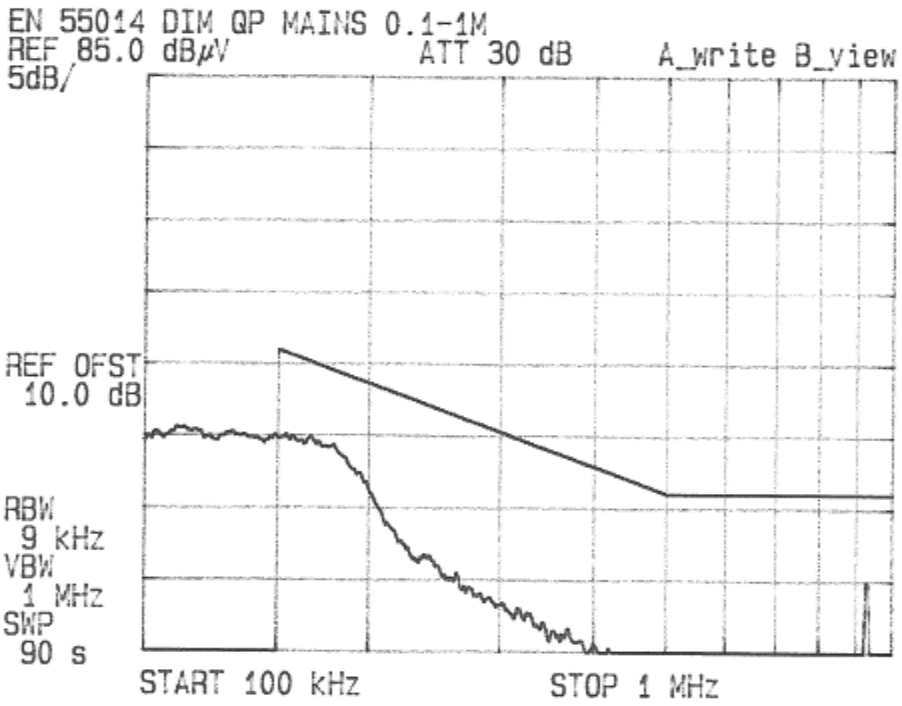


Load terminals - Neutral coupling (25% worst case) Average Detector:

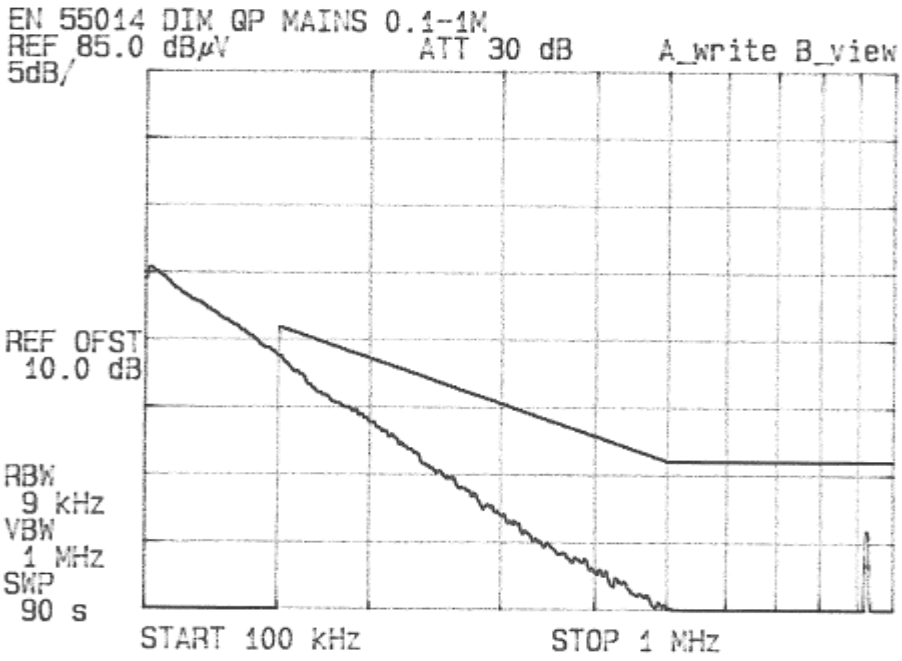


Test results – EVO-20-06 and EVO-LCD-55

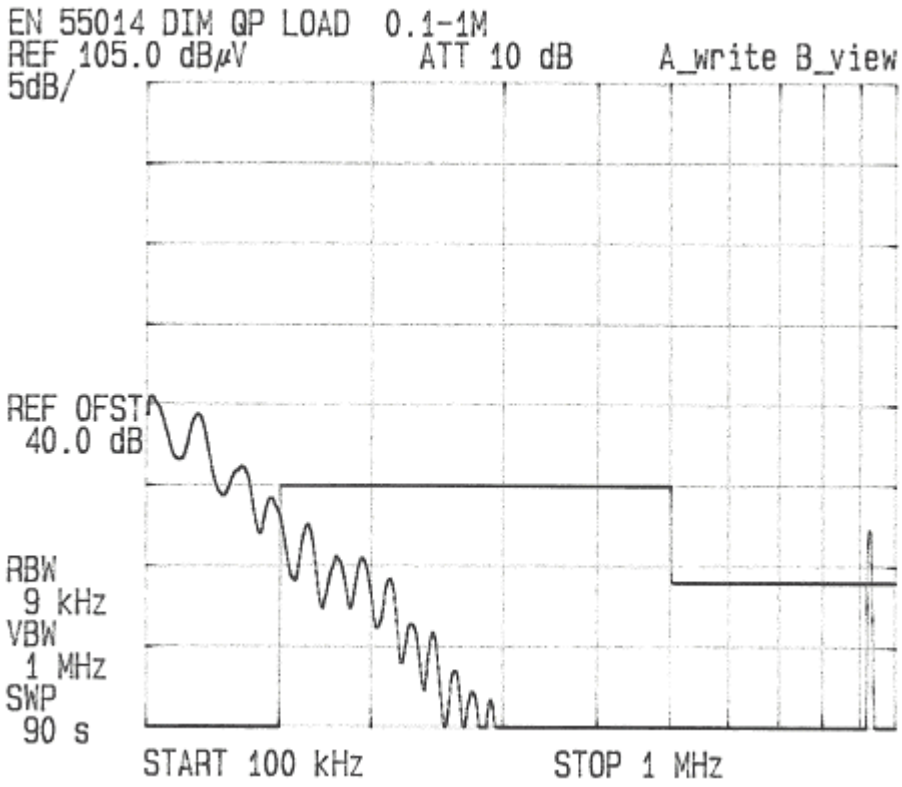
Mains terminals - Live coupling (25% worst case):



Mains terminals - Neutral coupling (25% worst case):



Load terminals (25% worst case):



LIMITS OF HARMONIC CURRENT EMISSIONS TO EN 61000-3-2 : 2006

Tested by:	A Hayllar
Test date:	12/07/2007
Test equipment used:	None required
Model tested:	EVO-10-12 / EVO-20-06 / EVO-LCD-55 (these models are highest power in range and therefore worst case for the purpose of testing)
Test result:	Pass. The product is exempt from this standard (Clause 7), as it is professional equipment with a rated power greater than 1kW.

LIMITATION OF VOLTAGE FLUCTUATIONS AND FLICKER to EN 61000-3-3 : 1995

Tested by:	A Hayllar
Test date:	01/07/2007
Test equipment used:	None required
Model tested:	EVO-10-12 / EVO-20-06 / EVO-LCD-55 (these models are highest power in range and therefore worst case for the purpose of testing)
Test result:	Pass. The product is exempt from this standard (Clause 6), as this product is unlikely to produce significant voltage fluctuations or flicker due to the circuits low power consumption and the fact that the load does not change. In addition, it should be noted that the product does not contain a mechanical switch or relay, that load level changes would be infrequent and incorporate a fade time.

IMMUNITY to EN 61547 : 2009

Tested by:	A Hayllar C Jones
Test date:	28/07/2010 30/07/2010
Test equipment used:	Schaffner Best Plus EMC Immunity Test System EN 61000-4-3 – Chase antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier EN 61000-4-6 (Mains) – Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor. EN 61000-3-6 (MBus): Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination
Model tested:	DIN-NPU-00-01 / DIN-INT-00-08 / DIN-RP-05-04 / DIN-PSU-24V / EVO-LCD-55
Test set up:	DIN-PSU-24V powering DIN-NPU-00-01, DIN-INT-00-08, DIN-RP-05-04 and EVO-LCD-55 via MBus. Tests conducted with DIN-RP-05-04 circuits 1 to 4 connected to 25W tungsten loads in ‘stand-alone’ mode with scene 3 selected (all relays closed/lamps on)
Test result:	Pass

The performance criterion for each test was taken from Table 14

Test results

Electrostatic Discharges to EN 61000-4-2

Performance criterion: B

Test Method: Ten discharges per test were applied to various locations on the fascia plate of the unit under test

Results:

Test No.	Voltage	Discharge Type	Result
1	+4000V	Contact	Pass
2	-4000V	Contact	Pass
3	+8000V	Air	Pass
4	-8000V	Air	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency Electromagnetic Fields to EN 61000-4-3

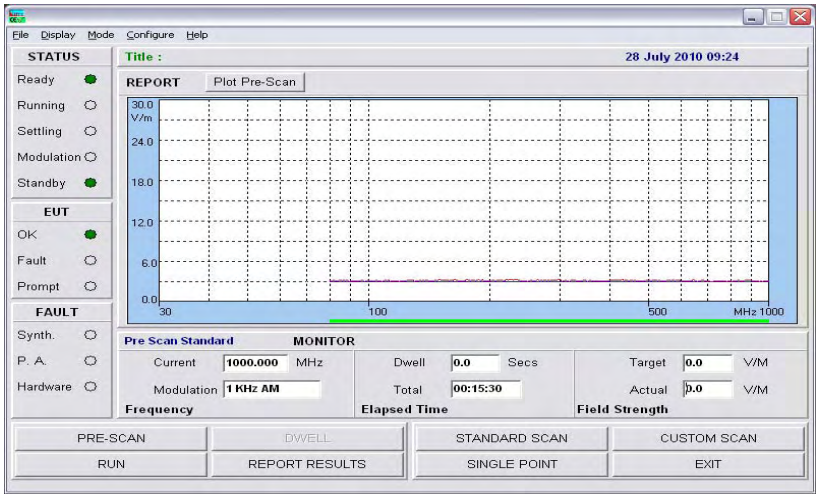
Performance criterion: A

Test Method: The test was carried out using a Chase Antenna, Turntable, Holaday HI4422 Isotropic Probe, Laplace RF1000 Synthesizer and Laplace RF1100 20W Power Amplifier in a ferrite lined anechoic chamber. Pre-scan and 4 complete scans were conducted with both vertical and horizontal polarization with the UUT in the front, right, left and rear turntable position with respect to the antenna

Results:

Limits	Coupling	Result
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated horizontal	Pass
80 to 1000MHz, 3V/m, 80% AM (1KHz)	Radiated vertical	Pass

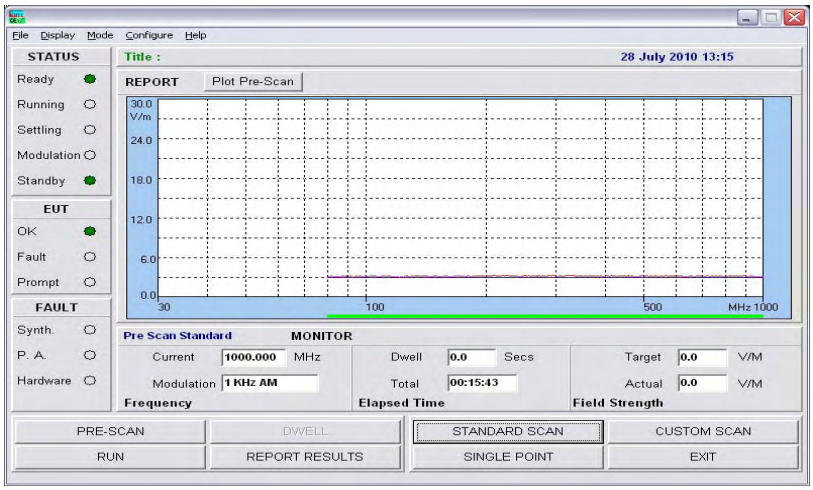
Observations: Pre-scan horizontal polarization



Four full horizontal scans were conducted with the UUT in the front, 90 degree right, 90 degree left and 180 degree rear turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
10:21::20	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::20	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
10:21::21	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
10:21::21	8	3	0F	12	7F	B9	0B	05	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
10:21::21	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	Start radiated test
12:57::39*** Bus Packet Framing Error ***												Test complete, power OFF

Pre-scan vertical polarization



Four full vertical scans were conducted with the UUT in the 180 degree rear, 90 degree right, 90 degree left and front turntable position with respect to the antenna

Mode Evolution by Mode Lighting (UK) Ltd. M-Bus Log File (File ver: 300905)												Comment
13:18::38	3	12	1	1	0C	3	1C	6	6E	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Pressed	
13:18::38	7	5	0	0	3	FF	0	0	6E	Pack 1 (M) > Dev 0 (ID=0x1ffff6bd)	Scene 3 recall request	
13:18::38	8	3	0E	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0E	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 2 (ID=0x1feff4b5)	Set passcode settings	
13:18::38	8	3	0C	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	15	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	16	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	17	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0C	18	7F	B9	0B	0	0	Pack 1 (MI) > Dev 3 (ID=0x1fe7f4b5)	Set passcode settings	
13:18::38	8	3	0F	11	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	12	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	13	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	0F	14	7F	B9	0B	0	0	Pack 1 (MI) > Dev 4 (ID=0x1fdff0b5)	Set passcode settings	
13:18::38	8	3	11	19	7F	81	B9	0B	0	Pack 1 (MI) > Dev 6 (ID=0x1fcff0b5)	Set passcode settings	
13:18::38	4	1	10	11	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	12	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	13	C8	B9	0B	0	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::38	4	1	10	14	C8	81	B9	0B	0	Pack 1 (MI) > Dev 5 (ID=0x1fd7f4b5)	Set aux device chan level	
13:18::39	3	12	3	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Released	
13:18::39	3	12	4	1	C8	B9	0B	0	0	Dev 8 > Pk 0 (ID=0x1fbfff7b)	PB 1 Inactive	Start radiated test
15:47::14*** Bus Packet Framing Error ***												Test complete, power OFF

No change of state observed.

Overall result: Pass

Fast Transients (Burst) to EN 61000-4-4

Performance criterion: B

Test Method: Bursts of 75 spikes at 5kHz were applied to the unit under test with a repetition rate of 300mS and an overall test duration of 2 minutes

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	External	Asynchronous	Pass
2	-500V	External	Asynchronous	Pass
3	+1000V	L	Zero crossing (0°)	Pass
4	+1000V	L	Peak (90°)	Pass
5	+1000V	N	Zero crossing (0°)	Pass
6	+1000V	N	Peak (90°)	Pass
7	+1000V	PE	Zero crossing (0°)	Pass
8	+1000V	PE	Peak (90°)	Pass
9	+1000V	L+N	Zero crossing (0°)	Pass
10	+1000V	L+N	Peak (90°)	Pass
11	+1000V	L+PE	Zero crossing (0°)	Pass
12	+1000V	L+PE	Peak (90°)	Pass
13	+1000V	N+PE	Zero crossing (0°)	Pass
14	+1000V	N+PE	Peak (90°)	Pass
15	+1000V	L+N+PE	Zero crossing (0°)	Pass
16	+1000V	L+N+PE	Peak (90°)	Pass
17	-1000V	L	Zero crossing (0°)	Pass
18	-1000V	L	Peak (90°)	Pass
19	-1000V	N	Zero crossing (0°)	Pass
20	-1000V	N	Peak (90°)	Pass
21	-1000V	PE	Zero crossing (0°)	Pass
22	-1000V	PE	Peak (90°)	Pass
23	-1000V	L+N	Zero crossing (0°)	Pass
24	-1000V	L+N	Peak (90°)	Pass
25	-1000V	L+PE	Zero crossing (0°)	Pass
26	-1000V	L+PE	Peak (90°)	Pass
27	-1000V	N+PE	Zero crossing (0°)	Pass
28	-1000V	N+PE	Peak (90°)	Pass
29	-1000V	L+N+PE	Zero crossing (0°)	Pass
30	-1000V	L+N+PE	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Surges to EN 61000-4-5

Performance criterion: C

Test Method: Five voltage surges were applied per test with a 20 second interval between pulses

Results:

Test No.	Voltage	Coupling	Angle	Result
1	+500V	L+N	Zero crossing (0°)	Pass
2	+500V	L+N	Peak (90°)	Pass
3	-500V	L+N	Zero crossing (0°)	Pass
4	-500V	L+N	Peak (90°)	Pass
5	+1000V	L+E	Zero crossing (0°)	Pass
6	+1000V	L+E	Peak (90°)	Pass
7	-1000V	L+E	Zero crossing (0°)	Pass
8	-1000V	L+E	Peak (90°)	Pass
9	+1000V	N+E	Zero crossing (0°)	Pass
10	+1000V	N+E	Peak (90°)	Pass
11	-1000V	N+E	Zero crossing (0°)	Pass
12	-1000V	N+E	Peak (90°)	Pass
13	+1000V	L+N+E	Zero crossing (0°)	Pass
14	+1000V	L+N+E	Peak (90°)	Pass
15	-1000V	L+N+E	Zero crossing (0°)	Pass
16	-1000V	L+N+E	Peak (90°)	Pass

Observations: No change of state observed

Overall result: Pass

Radio Frequency, Common Mode, to EN 61000-4-6

Performance criterion: A

Test Method: Mains Input: The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, 6dB attenuator, CDN-M3 Network, HP438 RF Power Meter (with sensor), 30dB attenuator and 100 Ohm matching resistor.

Control Input (MBus): The test was carried out using a Marconi 2024 RF Signal Generator, Amplifier Research AR75A250 Power Amplifier, Fischer F120-3 Current Transformer (with Cal. Fixture), HP438 RF Power Meter (with sensor), 30dB attenuator and 50 Ohm termination.

Results:

Limits	Coupling	Result
9k to 80MHz, 3V, 80% AM (1KHz)	CDN-M3 to Mains Input	Pass
9k to 80MHz, 3V, 80% AM (1KHz)	Current Transformer to Bus Cable	Pass

Observations: No change of state observed.

Overall result: Pass

Power Frequency Magnetic Fields to EN 61000-4-8

Performance criterion: A

Test Method: Test is not applicable, as the product contains no components that are susceptible to magnetic fields at the specified frequency range and test level

Overall result: Pass

Voltage Dips and Interruptions to EN 61000-4-11

Performance criterion: C (30%) / B (100%)

Test Method: 10 dips and interruptions with a voltage reduction and period as per the table below were applied to the unit under test with a 20 second interval between interruptions

Results:

Test No.	Test level	Duration	Result
1	70% (+ve polarity)	200mS	Pass
2	70% (-ve polarity)	200mS	Pass
3	0% (+ve polarity)	10mS	Pass
4	0% (-ve polarity)	10mS	Pass

Observations: No change of state observed upon completion of the tests

Overall result: Pass

6. APPENDIX D - TEST RESULTS AND CERTIFICATES - LVD

6.1 Test Results

Confidential

Test Report

Architectural Dimming Systems
Electronic Neon Convertors
Electronic Transformers

MODE LIGHTING (UK) LIMITED,
THE MALTINGS, 63 HIGH STREET,
WARE, HERTFORDSHIRE,
SG12 9AD, ENGLAND.

Telephone: +44 (0) 1920 462121
Facsimile: +44 (0) 1920 466881
e-mail: sales@modelighting.com

Mode eDIN / Control4 DIN Lighting Control System:

DIN-02-08 / DIN-C4-DR-DIM8-M,
DIN-03-04 / DIN-C4-DR-DIM4-M,
DIN-INT-00-08 / DIN-C4-DR-IOX8-M,
DIN-NPU-00-01 / DIN-C4-DR-NPU-M,
DIN-PSU-24V / DIN-C4-DR-PSU-M,
DIN-RP-05-04 / DIN-C4-DR-RM4-M,
DIN-UBC-01-05 / DIN-C4-DR-UBC-M,
EVO-INT-CI-04 / DIN-C4-DR-SW4-M,
EVO/MBUS-INT-232 / DIN-C4-DR-SER-M,
EVO-LCD-55, EVO-SGP-55, EVO-SGP-50,
EVO-SGP-20

Model(s) tested: DIN-02-08, DIN-03-04, DIN-INT-00-08, DIN-NPU-00-01, DIN-PSU-24V, DIN-RP-05-04, DIN-UBC-01-05, EVO-LCD-55, EVO-SGP-55

Test Specification: EN 60669-1 : 1999 and EN 60669-2-1 : 2004

Test date: 14th October to 18th December 2009

Results: The samples tested complied with the requirements when tested to the above specification. This issue supersedes any previous issue.

Prepared by: A C Hayllar

Authorised by:

A C Hayllar
Engineering Director

For and on behalf of Mode Lighting (UK) Limited

Date: 14th January 2010 Ware, Hertfordshire, UK

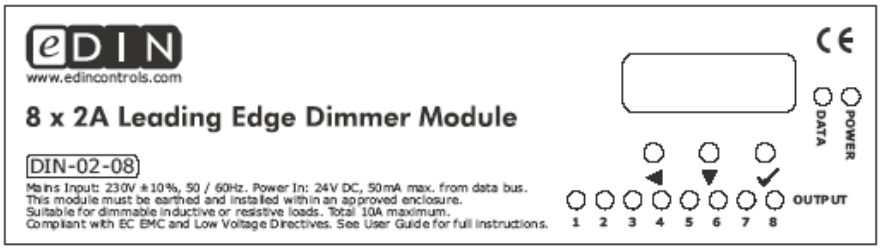
Scope of Coverage:

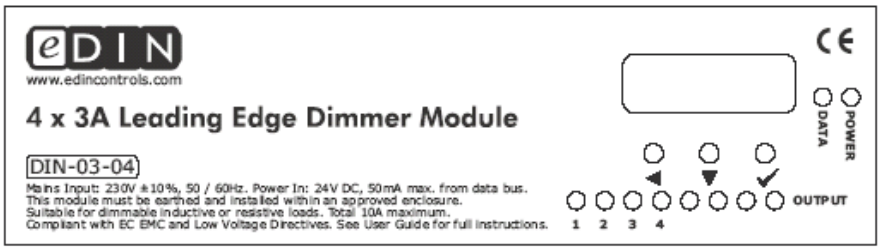
The Electronic Switches covered by this report are listed below:

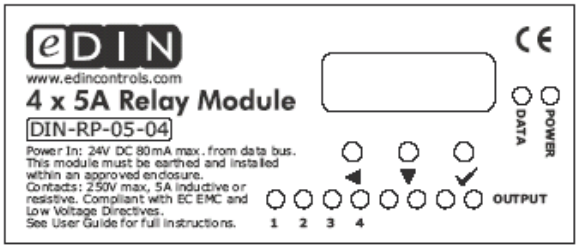
Manufacturer:	Mode Lighting (UK) Limited	
Specification:	EN 60669-1 : 1999 and EN 60669-2-1 : 2004	
Brand Name:	eDIN Lighting Control System	
Type Reference:	DIN-02-08	8 x 2A Leading Edge Dimmer Module
	DIN-03-04	4 x 3A Leading Edge Dimmer Module
	DIN-INT-00-08	8 x Channel I/O Module
	DIN-NPU-00-01	Network Processor Module
	DIN-PSU-24V	Power Supply Module
	DIN-RP-05-04	4 x 5A Relay Module
	DIN-UBC-01-05	Universal Ballast Control Module
	EVO-LCD-55	10 Button LCD Control Plate
	EVO-SGP-55	10 Button Control Plate
	EVO-SGP-50	5 Button Control Plate
	EVO-SGP-20	2 Button Control Plate
	EVO-INT-CI-04	4 way Contact Input Module
	EVO/MBUS-INT-232	RS232 to MBus Interface
Classification:	Electronic switch Multi-way single pole semiconductor switch (dimmer) and Multi-way single pole electromagnetically operated contact mechanism with micro-gap construction (relay)	
Installation:	Household and similar fixed-electrical installation	
Location:	Indoor only	
Electric shock protection:	Class 1, mains earth required	
Load type:	Incandescent lamps at mains or low voltage when fed from a suitable transformer or electronic convertor, fluorescent lamps and motors	
Supply voltage:	230V +/-10% 50Hz / 60Hz single phase	

Output current:	DIN-02-08	10A total maximum
	DIN-03-04	10A total maximum
	DIN-RP-05-04	5A maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA
Output Power:	DIN-02-08	2500W total maximum
	DIN-03-04	2500W total maximum
	DIN-RP-05-04	1200W maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA
Ta:	0 to +30°C maximum	

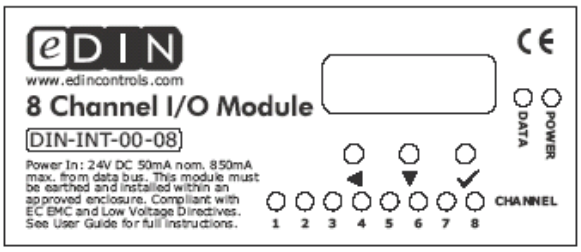
Product Labels:

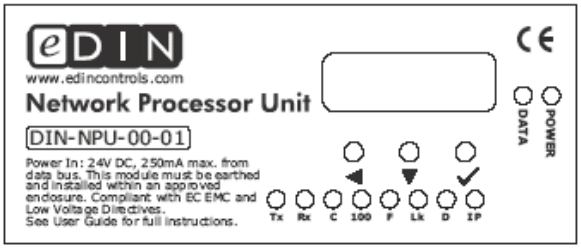

eDIN
www.edincontrols.com
8 x 2A Leading Edge Dimmer Module
DIN-02-08
Mains Input: 230V ±10%, 50 / 60Hz. Power In: 24V DC, 50mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Suitable for dimmable inductive or resistive loads. Total 10A maximum.
Compliant with EC EMC and Low Voltage Directives. See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4 5 6 7 8

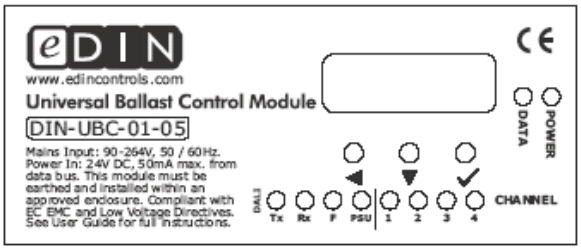

eDIN
www.edincontrols.com
4 x 3A Leading Edge Dimmer Module
DIN-03-04
Mains Input: 230V ±10%, 50 / 60Hz. Power In: 24V DC, 50mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Suitable for dimmable inductive or resistive loads. Total 10A maximum.
Compliant with EC EMC and Low Voltage Directives. See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4


eDIN
www.edincontrols.com
4 x 5A Relay Module
DIN-RP-05-04
Power In: 24V DC 80mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Contacts: 250V max, 5A inductive or resistive. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4

eDIN
www.edincontrols.com
Power Supply
DIN-PSU-24V
Mains Input: 90-264V, 50 / 60Hz.
This module must be earthed and installed within an approved enclosure.
Total 1A output max. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.


eDIN
www.edincontrols.com
8 Channel I/O Module
DIN-INT-00-08
Power In: 24V DC 50mA nom. 850mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
CHANNEL
1 2 3 4 5 6 7 8

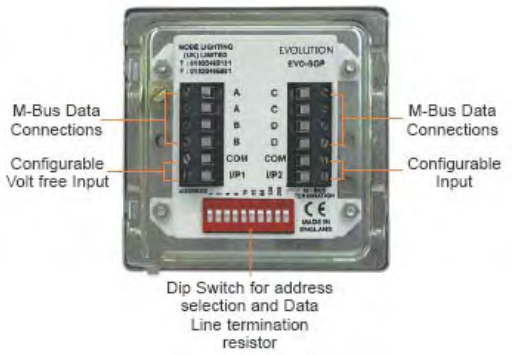

eDIN
www.edincontrols.com
Network Processor Unit
DIN-NPU-00-01
Power In: 24V DC, 250mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
Tx Rx C 100 F Lk D IP


eDIN
www.edincontrols.com
Universal Ballast Control Module
DIN-UBC-01-05
Mains Input: 90-264V, 50 / 60Hz.
Power In: 24V DC, 50mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
CHANNEL
Tx Rx F PSU 1 2 3 4

EVO-SGP-55 front view

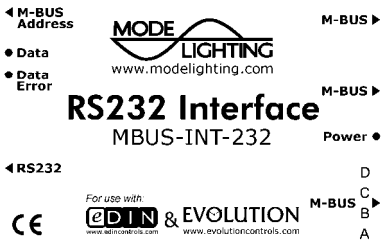
EVO-SGP-50 front view

EVO-SGP-20 front view

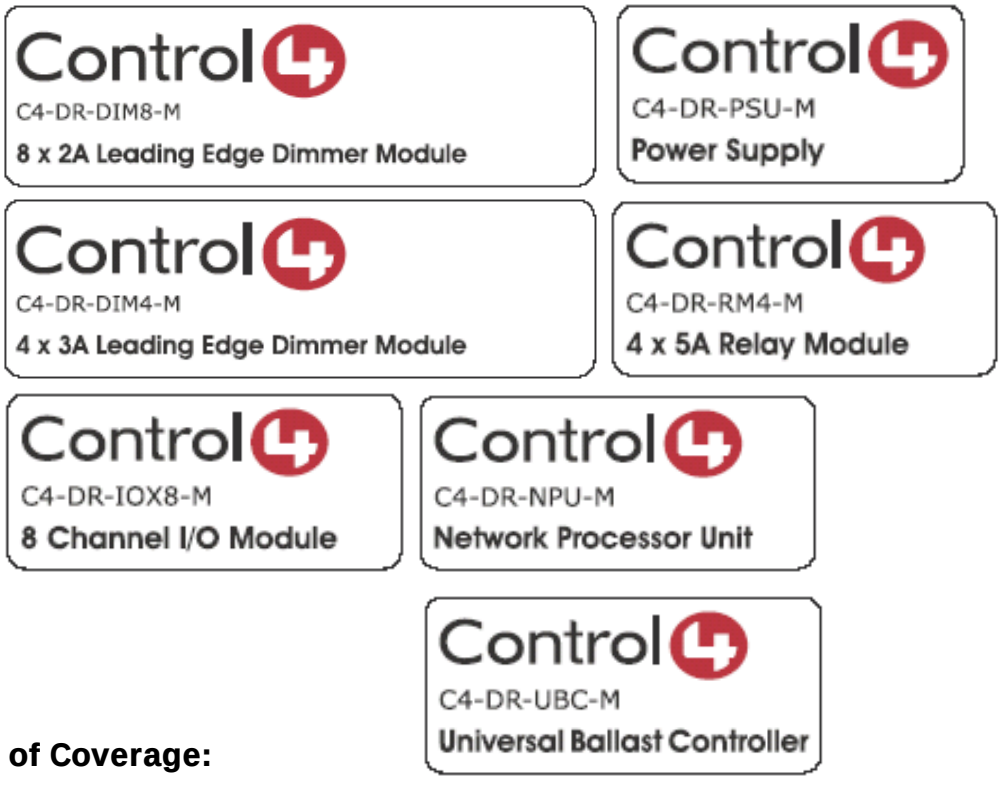

M-Bus Data Connections
Configurable Volt free Input
M-Bus Data Connections
Configurable Input
Dip Switch for address selection and Data Line termination resistor

EVO-SGP-55/50/20 rear view

EVO-INT-CI-04



Product Labels Control4 DIN:



Limitation of Coverage:

The Mode eDIN /Control4 DIN Lighting Control System was reviewed as a stand-alone product and is based upon the type test and inspection of sample product.

This test report is based on:

	EN 60669-1 : 1999 Switches for household and similar fixed electrical installations Part 1. General requirements
and	EN 60669-2-1 : 2004 Switches for household and similar fixed electrical installations Part 2-1 : Particular requirements – Electronic switches
Type:	Electronic switch Multi-way single pole semiconductor switch (dimmer) and Multi-way single pole electromagnetically operated contact mechanism with micro-gap construction (relay)
Installation:	Household and similar fixed-electrical installation
Location:	Indoor only
Electric shock protection:	Class 1, mains earth required
Supply voltage:	230V +/-10% 50Hz / 60Hz single phase

Output current:

DIN-02-08	10A total maximum
DIN-03-04	10A total maximum
DIN-RP-05-04	5A maximum (volt-free contact)
DIN-INT-00-08	NA
DIN-NPU-00-01	NA
DIN-PSU-24V	NA
DIN-UBC-01-05	NA
EVO-LCD-55	NA
EVO-SGP-55	NA
EVO-SGP-50	NA
EVO-SGP-20	NA
EVO-INT-CI-04	NA
EVO/MBUS-INT-232	NA

Output Power:	DIN-02-08	2500W total maximum
	DIN-03-04	2500W total maximum
	DIN-RP-05-04	1200W maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA

Ta: 0 to +30°C maximum

Type of terminals: Screw terminals

Marking plate: DIN-02-08 / DIN-C4-DR-DIM8-M,
DIN-03-04 / DIN-C4-DR-DIM4-M,
DIN-INT-00-08 / DIN-C4-DR-IOX8-M,
DIN-NPU-00-01 / DIN-C4-DR-NPU-M,
DIN-PSU-24V / DIN-C4-DR-PSU-M,
DIN-RP-05-04 / DIN-C4-DR-RM4-M,
DIN-UBC-01-05 / DIN-C4-DR-UBC-M,
EVO-INT-CI-04 / DIN-C4-DR-SW4-M,
EVO/MBUS-INT-232 / DIN-C4-DR-SER-M,
EVO-LCD-55,
EVO-SGP-55,
EVO-SGP-50,
EVO-SGP-20

Remarks:
Requirements not applicable marked “NA” Requirements not tested marked “NT”

Clause	Observed	Comply
6	Rating	
6.1	Rated a.c. voltage 230V	OK
6.2	This subclause of part 1 does not apply	NA
6.3	Rated supply frequency 50Hz / 60Hz	OK
7	Classification	
7.1	Switch Classification:	
7.1.1	Electronic switch multi-way single pole	OK
7.1.2	Electronic, semiconductor without contact mechanism (dimmer) and electromagnetically operated contact mechanism with micro-gap construction (relay)	OK
7.1.3	This subclause is blank	OK
7.1.4	Ordinary switch, IPX0	OK
7.1.5	Push-button / Other external influence	OK
7.1.6	Surface-type (modules) / Flush-type (control plates)	OK
7.1.7	Design B (modules) / Design A (control plates)	OK
7.1.8	Screw-type terminals	OK
7.1.9	Ordinary switch, IP2X	OK
7.1.101	Incandescent lamps at mains or low voltage when fed from a suitable transformer or electronic convertor (dimmer and relay) and fluorescent lamps and motors (relay only)	OK
7.2	This subclause of part 1 does not apply	NA

Clause	Observed	Comply
8	Marking	
8.1	Rated load:	
	DIN-02-08 8 circuits of 2A each, 10A total maximum	
	DIN-03-04 4 circuits of 3A each, 10A total maximum	
	DIN-RP-05-04 5A maximum (volt-free contact)	
	EVO-RP-05-04 3A maximum (volt-free contact)	OK
	Rated voltage:	
	DIN-02-08 230V +/- 10%	
	DIN-03-04 230V +/- 10%	
	230V +/- 10%	
	DIN-PSU-24V 100 - 230V +/- 10%	OK
	Rated frequency:	
	DIN-02-08 50Hz / 60Hz	
	DIN-03-04 50Hz / 60Hz	
	DIN-UBC-01-05 50Hz / 60Hz	
	DIN-PSU-24V 50Hz / 60Hz	OK
	Manufacturer: Mode Lighting (UK) Limited	OK
	Type reference:	
	DIN-02-08	
	DIN-03-04	
	DIN-RP-05-04	
	EVO-RP-03-02	
	DIN-INT-00-08	
	DIN-NPU-00-01	
	DIN-PSU-24V	
	DIN-UBC-01-05	
	EVO-LCD-55	
	EVO-SGP-55	
	EVO-SGP-50	
	EVO-SGP-20	
	EVO-INT-CI-04	
	EVO-INT-CI-08	
	EVO-INT-IR-TX38	
	EVO-IR-CM	
	EVO/MBUS-INT-232	
	EVO-BUS-02	
	IR-00-08	OK

Clause	Observed	Comply
	Load symbols: Incandescent lamps at mains or low voltage when fed from a suitable transformer or electronic convertor (dimmer and relay) and fluorescent lamps and motors (relay)	OK
8.2	Symbols comply with EN 60669-1 and EN 60669-2-1	OK
8.3	Markings comply with EN 60669-1 and EN 60669-2-1 and are placed on the main part of the electronic switch	OK
8.4	Phase terminal identification complies with EN 60669-1 and EN 60669-2-1	OK
8.5	Neutral terminal identification complies with EN 60669-1 and EN 60669-2-1. Earthing terminal identified with the symbol ⏚	OK
8.6	Switch position marking complies with EN 60669-1 and EN 60669-2-1.	OK
8.6.101	Actual state of electronic switch intended to control lamp brightness indicated by LED. In addition, light is still visible from lamp at lowest dimmer control state at rated voltage minus 10%	OK
8.7	No push button is coloured red	OK
8.8	Installation guide accompanies product	OK
8.9	Marking durable and legible. Checked with water (15s) and hexane (15s)	OK
9	Modules to be mounted in a suitable surface mount enclosure with integral DIN rail (EN 50022, BS 5584). Control plate to be mounted flush in standard BS4662 46mm depth or surface in standard BS5733 45mm depth UK single gang backbox	OK
10	Protection against electric shock	
10.1	Live parts not accessible without the use of a tool when mounted and wired as in normal use	OK

Clause	Observed	Comply
10.2	Push-buttons and the like are of insulating material. No touch sensitive switches present	OK
10.3	Accessible parts are made of insulating material unless excepted by this clause	OK
10.3.1	Covers, cover plates and other parts of the enclosure of metal are protected by additional insulation or the provision of subclause 10.3.2, below	OK
10.3.2	The earthing of metal covers, cover plates and other parts of the enclosure is made while fixing the covers, cover plates and other parts of the enclosure and is made without requiring the use of means other than the fixing means. The resulting connection is of low resistance	OK
10.4	No metal parts of the mechanism protrude from the enclosure	OK
10.5	No metal parts of the mechanism are accessible when the product is fixed as in normal use	OK
10.6	No switch is operated by means of a removable key or intermediate part such as a cord, chain or rod	OK
10.7	No switch is cord operated	OK
10.101	No cover plates removable without use of a tool	OK
10.102	No holes provided for adjustment	OK
10.103	No ventilation opening allows a foreign body to pass and make contact with live parts in normal use	OK
11	Provision for earthing	
11.1	Accessible metal parts, which can become live in the event of an insulation fault, are provided with, or are permanently and reliably connected to, an earthing terminal	OK

Clause	Observed	Comply
11.2	Earthing terminal has screw clamp and a capacity that is not less than that of the corresponding supply conductor terminals, and complies with the appropriate requirement of clause 12, below	OK
11.3	Earthing terminal or adequate space for floating terminal provided	OK
11.4	Connection between the earthing terminal and accessible metal parts is of low resistance	OK
12	Terminals	
12.1	Screw clamping terminals provided	OK
12.2	Terminals with screw clamping for external copper conductors:	
12.2.1	Terminals allow proper connection of copper conductors having cross-sectional area as shown in table 2. Nominal cross sectional area input 1.0mm^2 to 2.5mm^2 for rated current up to 10A / output 0.5mm^2 to 1.5mm^2 for rated current up to 2A, 3A or 5A	OK
12.2.2	Terminals allow the conductor to be connected without special preparation	OK
12.2.3	Terminals have adequate mechanical strength	OK
12.2.4	Terminals resistant to corrosion	OK
12.2.5	Terminals clamp the conductors without undue damage	OK
12.2.6	Terminals clamp the conductors reliably between metal surfaces	OK
12.2.7	Terminals so designed such that neither a rigid solid conductor nor a wire of stranded conductor slip out whilst the clamping screw is tightened	OK
12.2.8	Terminals so fixed and located such that they do not work loose when the clamping screw is tightened or loosened	OK

Clause	Observed	Comply
12.2.9	Clamping screw of earthing terminal is adequately locked against accidental loosening and cannot be loosened without the aid of a tool	OK
12.2.10	Earthing terminal is resistant to corrosion from contact between it and the copper earthing conductor or other metal with which it is in contact	OK
12.2.11	Distance between clamping screw and end of fully inserted conductor for pillar terminal shall be at least that specified in figure 1. Terminals are not mantle type	OK OK
12.2.12	Terminals are not lug type	
12.3	Screwless terminals:	NA
12.3.1	This subclause does not apply	NA
12.3.2	This subclause does not apply	NA
12.3.3	This subclause does not apply	NA
12.3.4	This subclause does not apply	NA
12.3.5	This subclause does not apply	NA
12.3.6	This subclause does not apply	NA
12.3.7	This subclause does not apply	NA
12.3.8	This subclause does not apply	NA
12.3.9	This subclause does not apply	NA
12.3.10	This subclause does not apply	NA
12.3.11	This subclause does not apply	NA
12.3.12	This subclause does not apply	

Clause	Observed	Comply
13	Constructional requirements	
13.1	Insulating linings, barriers and the like have adequate strength	OK
13.2	Electronic switch is constructed so as to permit easy introduction and connection of the conductors in the terminals, correct positioning of the conductors, easy fixing to the backbox / enclosure and adequate space between the underside and the backbox / within the enclosure so that, after installation, the insulation of the conductors is not necessarily pressed against live parts of different polarity	OK
13.3	Covers, cover plates and actuating members or parts of them, which are intended to ensure protection against electric shock, are held in place at two or more points by an effective fixing	OK
13.3.1	Covers, cover plates or actuating members with screw-type fixing comply with the requirements for safety and construction	OK
13.3.2	Covers, cover plates or actuating members, without screw-type fixing, where removal is obtained by applying force in a direction approximately perpendicular to the mounting surface, which may give access, with the standard test finger, only to insulated parts or earthed metal parts, comply with test 20.6	OK
13.3.3	Covers, cover plates or actuating members, without screw-type fixing, where removal is obtained by using a tool in accordance with the manufacturers instructions given in an instruction sheet, which may give access, with the standard test finger, only to insulated parts or earthed metal parts comply with test 20.6, except that the covers, cover plates or actuating members need not come off when applying a force not exceeding 120N in directions perpendicular to the mounting surface	OK
13.4	There are no free openings in the enclosure when fixed and wired as in normal use.	OK
13.5	There are no rotary switches	OK
13.6	Fixing screws or other means for mounting are easily accessible from the front and serve no secondary fixing purpose	OK

Clause	Observed	Comply
13.7	Electronic switch comprises a single base with independent fixing	OK
13.8	Accessories combined with the electronic switch comply with the standard	OK
13.9	Electronic switch IP rating is not compromised when fitted with conduit or PVC sheathed or similar types of cable	OK
13.10	Design facilitates preparation of the conductor ends in backbox / enclosure prior to fitting of electronic switch. The base has adequate stability when mounted in the backbox / enclosure	OK
13.11	This subclause does not apply	NA
13.12	Specified backboxes / enclosures facilitate the introduction of conduit or the sheath of the cable to afford complete mechanical protection and provide sufficient inlet openings for conduit or cable entry	OK
13.13	This subclause does not apply	NA
13.14	There are no membranes	OK
13.15	There are no membranes	OK
13.15.1	There are no membranes. Lenses and the like are reliably fixed	OK
13.15.2	There are no membranes	OK
13.101	Protection is provided by external fuse or circuit breaker rated at 10A maximum compliant to National Wiring Regulations or other applicable Regulations	OK
13.102	Maximum tolerance of dimmer phase-control angle between the positive and negative half-wave is +/- 2^{o} or better	OK
13.103	Connecting cables to comply with to National Wiring Regulations or other applicable Regulations	OK

Clause	Observed	Comply
14	Mechanism	
14.1	Switches are internal and momentary push button	OK
14.2	Switches are constructed such that the moving contacts come to rest only in the “off” position	OK
14.3	Undue arcing does not occur	OK
14.4	Switches are single pole	OK
14.5	Action of the mechanism is independent of the presence of the cover or cover plate	OK
14.6	No switch is cord operated	OK
15	Resistance to ageing, protection provided by enclosures, and resistance to humidity	OK
15.1	Electronic switch resistant to aging in accordance with IP class	OK
15.2	Protection provided by enclosure:	
15.2.1	Enclosure provides degree of protection against access to hazardous parts and against harmful effects due to ingress of solid foreign objects in accordance with IP classification:	
15.2.1.1	Protection against access to hazardous parts	OK
15.2.1.2	Protection against harmful effects due to ingress of solid foreign bodies	OK
15.2.2	Enclosure provides degree of protection against harmful effects due to ingress of water in accordance with IP classification	OK
15.3	Electronic switch is proof against humidity which may occur in normal use in accordance with IP classification	OK

Clause	Observed	Comply
16	Insulation resistance and electric strength	
16.1	Insulation resistance from any terminal or live part to the body or accessible metal part is adequate	OK
16.2	Electric strength from any terminal or live part to the body or accessible metal part is adequate	OK
17	Temperature rise	
17.1	The temperature rise of the electronic switch in normal use is not excessive. The metal and design of the contacts is such that the operation of the electronic switch is not adversely affected by oxidation or other deterioration. The design and material of the electronic switch is such that the material and components are not adversely affected by the temperature rise in normal use	OK
17.2	The temperature rise of the accessible surface is not excessive	OK
18	Making and breaking capacity	
18.1	Electronic switch has adequate making and breaking capacity	OK
18.2	This subclause does not apply	NA
18.101	Electronic switch shows no damage impairing further use	OK
18.102	This subclause does not apply	NA
19	Normal operation	
19.1	Electronic switch withstands electrical and thermal stresses in normal use as per subclauses 19.101, 19.102, 19.103, 19.104. and 19.105	OK
19.2	This subclause does not apply	NA

Clause	Observed	Comply
19.101	Internal contact mechanisms are internal and have rated life expectancy of >40,000 operations for incandescent lamps	OK
19.102	Internal contact mechanisms are internal and have rated life expectancy of >10,000 operations for fluorescent lamps	OK
19.103	Electronic switch operates correctly	OK
19.104	Switches are internal and have rated life expectancy of 1,000,000 operations	OK
19.105	Electronic switch operates correctly	OK
	Note: Upon completion of tests 19.101, 19.102, 19.103,19.104 and 19.105 the electric strength from any terminal or live part to the body or accessible metal part is adequate. No wear impairing further use, deterioration of the enclosures, insulating linings or barriers to such an extent that the electronic switch cannot be further operated or that the requirements of clause 10 are no longer complied with, loosening of electrical or mechanical connections, or seepage of sealing compound is evident	OK
20	Mechanical strength	
20.1	No damage within the meaning of the standard. In particular live parts do not become accessible	OK
20.2	No damage within the meaning of the standard	OK
20.3	This subclause does not apply	NA
20.4	Force necessary for covers, cover plates or actuating members to come off or not come off:	
20.4.1	No access to live parts within the meaning of the standard	OK
20.4.2	This subclause does not apply	NA

Clause	Observed	Comply
20.5	No access to non-earthed metal parts separated by creepage distances according to table 20 within the meaning of the standard	OK
20.6	No access to insulating / earthed / SELV or non-earthed metal part separated by creepage distances and by clearances twice those according to table 20 within the meaning of the standard	OK
20.7	Electronic switch compliant	OK
20.8	Electronic switch compliant	OK
20.9	No switch is cord operated	OK
21	Resistance to heat	
21.1	No change impairing future use. No access to live parts which are normally not accessible. Markings still legible	OK
21.2	Parts of insulating material necessary to retain current-carrying parts and parts of the earthing circuit in position are compliant	OK
21.3	Parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though they are in contact with them, are compliant	OK
22	Screws, current-carrying parts and connections	
22.1	No damage impairing further use of screws and nuts which are operated when connecting the external conductors and mounting the switch during installation	OK
22.2	No screw engages with a thread of insulating material during installation.	OK
22.3	Electrical connections are so designed such that contact pressure is not transmitted through insulating material	OK
22.4	Screws and rivets, which serve as electrical as well as mechanical connections, are locked against loosening or turning	OK

Clause	Observed	Comply
22.5	Current-carrying parts, including those of terminals and earth terminals, are of a metal that has adequate mechanical strength, electrical conductivity and resistance to corrosion for the intended use	OK
22.6	Contacts which are subject to a sliding action in normal use are of a metal that is resistant to corrosion	OK
22.7	No thread-forming screw or thread-cutting screw is used for the connection of current carrying parts. Two or more thread-forming screws or thread-cutting screws that are not disturbed in normal use are used to provide earth continuity	OK
23	Creepage distances, clearance and distances through sealing compound	
23.1	Creepage distances, clearance and distances through sealing compound are not less than the values shown in table 20	OK
23.2	Insulating compound does not protrude above the edge of the cavity in which it is contained	OK
23.3	There are no bare current-carrying strips to the back of the switch	OK
24	Resistance of insulating material to abnormal heat, to fire and to tracking	
24.1	Parts of insulating material which might be exposed to thermal stresses due to electric effects, and the deterioration of which might impair the safety of the electronic switch, are not unduly affected by abnormal heat and by fire	OK
24.1.1	a) Parts of insulating material necessary to retain current-carrying parts, and parts of the earthing circuit in position, except for parts of insulating materials necessary to hold in position the earthing terminal in an enclosure, are compliant	OK

Clause	Observed	Comply
	b) Parts of insulating material not necessary to retain current-carrying parts and parts of the earthing circuit in position, even though they are in contact with them, and parts of insulating materials necessary to hold in position the earthing terminal in an enclosure, are compliant	OK
24.2	Electronic switch resistance to tracking	OK
25	Ferrous parts adequately protected against rusting	OK
26	EMC Requirements	
26.1	EMC immunity compliant to EN 60669-2-2 and EN 61547	OK
26.1.1	Voltage dips and interruptions cause no change to switch state and/or setting	OK
26.1.2	Surges cause no change to switch state and/or setting	OK
26.1.3	Fast transients cause no change to switch state and/or setting	OK
26.1.4	Electrostatic discharges cause no change to switch state and/or setting	OK
26.1.5	Radiated electronic fields cause no change to switch state and/or setting	OK
26.1.6	This subclause does not apply	NA
26.1.7	This subclause does not apply	NA
26.2	EMC emission compliant to EN 60669-2-2	OK
26.2.1	Low frequency emissions compliant with EN 61000-3-2 and EN 61000-3-3	OK
26.2.2	Radio frequency emissions compliant with EN 55015	OK

Clause	Observed	Comply
101	Abnormal conditions	
101.1	No part reached such a temperature that there was danger of fire to the surroundings of the electronic switch:	
101.1.1	Each abnormal condition was simulated in turn, except where one fault condition influenced another, in which case the conditions were applied simultaneously:	
101.1.1.1	- Short circuit applied across creepage distances and clearances, other than those complying with the requirements of clause 23, where less than the values given for curve A of table II of EN 60065	OK
	- Short circuit applied across insulated coatings, consisting of for example lacquer or enamel	OK
	- Short circuit and interrupt semiconductor devices	OK
	- Short circuit electrolytic capacitors	OK
	- Short circuit and interrupt capacitors and resistors not compliant to clause 102	OK
	- Short circuit load side terminals	OK
101.1.1.2	- Overload for 1 hour with the conventional tripping current for the external installation protection fuse	OK
101.2	Electronic switch compliant with the requirements of clause 10 upon completion of abnormal tests	OK
101.3	Electronic switch compliant to short circuit test	OK
102	Components	
102.1	No internal fuse incorporated	OK
102.2	Capacitors compliant	OK
102.3	Resistors compliant	OK
102.4	No automatic protection device incorporated	OK
102.4.1	No cut-out incorporated	OK

Clause	Observed	Comply
102.4.1.1	No non-self-resetting load circuit cut-out incorporated	OK
102.4.1.2	No self-resetting load circuit cut-out incorporated	OK
102.4.2	No automatic protection devices which decrease current to the electronic switch incorporated	OK
A	Annex A (normative)	OK
B	Annex B (normative)	NA
ZA	Annex ZA (normative)	OK
ZB	Annex ZB (normative)	OK

7. APPENDIX E

7.1 C-Tick Compliance Level 2 Test Results – EMC to AS/NZS CISPR 15 : 2006

Confidential

Test Report

Architectural Dimming Systems
Electronic Neon Convertors
Electronic Transformers

MODE LIGHTING (UK) LIMITED,
THE MALTINGS, 63 HIGH STREET,
WARE, HERTFORDSHIRE,
SG12 9AD, ENGLAND.

Telephone: +44 (0) 1920 462121
Facsimile: +44 (0) 1920 466881
e-mail: sales@modelighting.com

Mode eDIN / Control4 DIN Lighting Control System:

DIN-02-08 / DIN-C4-DR-DIM8-M,
DIN-03-04 / DIN-C4-DR-DIM4-M,
DIN-INT-00-08 / DIN-C4-DR-IOX8-M,
DIN-NPU-00-01 / DIN-C4-DR-NPU-M,
DIN-PSU-24V / DIN-C4-DR-PSU-M,
DIN-RP-05-04 / DIN-C4-DR-RM4-M,
DIN-UBC-01-05 / DIN-C4-DR-UBC-M,
EVO-INT-CI-04 / DIN-C4-DR-SW4-M,
EVO/MBUS-INT-232 / DIN-C4-DR-SER-M,
EVO-LCD-55, EVO-SGP-55, EVO-SGP-50,
EVO-SGP-20

Model(s) tested:	DIN-02-08, DIN-03-04, DIN-INT-00-08, DIN-NPU-00-01, DIN-PSU-24V, DIN-RP-05-04, DIN-UBC-01-05, EVO-LCD-55, EVO-SGP-55
Test Specification:	AS/NZS CISPR 15 : 2006
Test date:	18th November 2009 to 30th June 2010
Results:	The samples tested complied with the requirements when tested to the above specification. This issue supersedes any previous issue.
Prepared by:	A C Hayllar
Authorised by:	A C Hayllar Engineering Director

For and on behalf of Mode Lighting (UK) Limited

Date: 30th June 2010 Ware, Hertfordshire, UK

SCOPE OF COVERAGE:

The Electronic Switches covered by this report are listed below:

Manufacturer:	Mode Lighting (UK) Limited, Ware, SG12 9AD, UK
Responsible Vendor:	Control4, Salt Lake City, Utah 84020, USA
Specification:	AS/NZS CISPR 15 : 2006
Brand Name:	Mode eDIN / Control4 DIN Lighting Control System

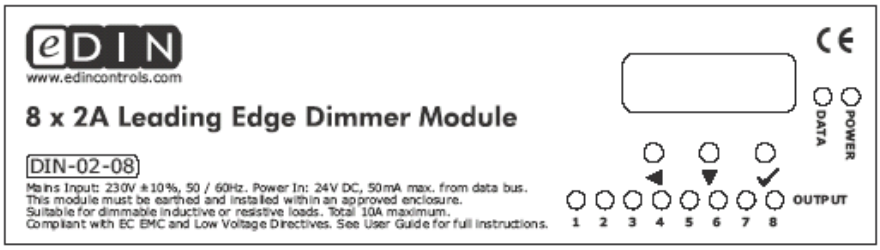
Type Reference:

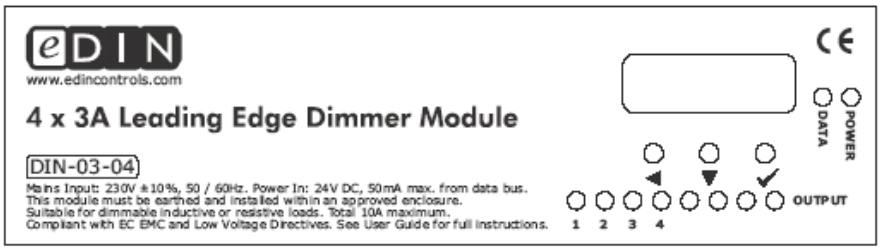
DIN-02-08	8 x 2A Leading Edge Dimmer Module
DIN-03-04	4 x 3A Leading Edge Dimmer Module
DIN-INT-00-08	8 x Channel I/O Module
DIN-NPU-00-01	Network Processor Module
DIN-PSU-24V	Power Supply Module
DIN-RP-05-04	4 x 5A Relay Module
DIN-UBC-01-05	Universal Ballast Control Module
EVO-LCD-55	10 Button LCD Control Plate
EVO-SGP-55	10 Button Control Plate
EVO-SGP-50	5 Button Control Plate
EVO-SGP-20	2 Button Control Plate
EVO-INT-CI-04	4 way Contact Input Module
EVO/MBUS-INT-232	RS232 to MBus Interface

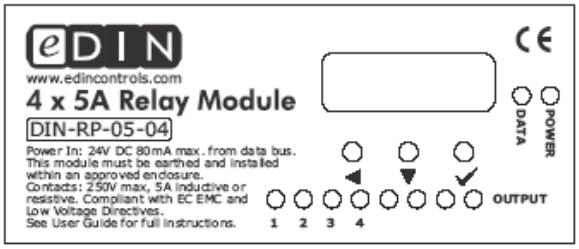
Classification:	Electronic switch Multi-way single pole semiconductor switch (dimmer) and Multi-way single pole electromagnetically operated contact mechanism with micro-gap construction (relay)
Installation:	Household and similar fixed-electrical installation
Location:	Indoor only
Electric shock protection:	Class 1, mains earth required
Load type:	Incandescent lamps at mains or low voltage when fed from a suitable transformer or electronic convertor, fluorescent lamps and motors
Supply voltage:	230V +/-10% 50Hz / 60Hz single phase

Output current:	DIN-02-08	10A total maximum
	DIN-03-04	10A total maximum
	DIN-RP-05-04	5A maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA
Output Power:	DIN-02-08	2500W total maximum
	DIN-03-04	2500W total maximum
	DIN-RP-05-04	1200W maximum (volt-free contact)
	DIN-INT-00-08	NA
	DIN-NPU-00-01	NA
	DIN-PSU-24V	NA
	DIN-UBC-01-05	NA
	EVO-LCD-55	NA
	EVO-SGP-55	NA
	EVO-SGP-50	NA
	EVO-SGP-20	NA
	EVO-INT-CI-04	NA
	EVO/MBUS-INT-232	NA
Ta:	0 to +30°C maximum	

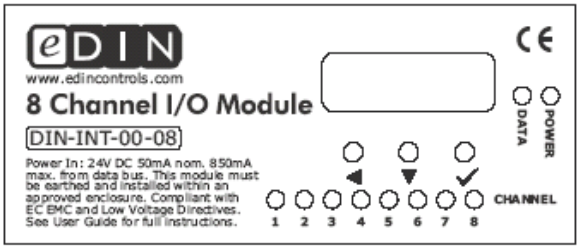
Product Labels Mode eDIN:

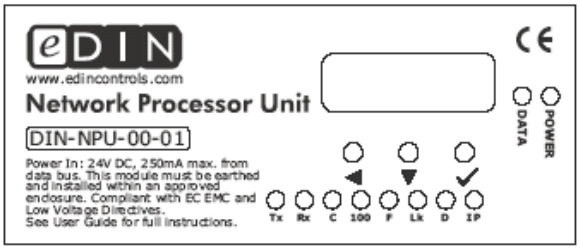

eDIN
www.edincontrols.com
8 x 2A Leading Edge Dimmer Module
DIN-02-08
Mains Input: 230V ±10%, 50 / 60Hz. Power In: 24V DC, 50mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Suitable for dimmable inductive or resistive loads. Total 10A maximum.
Compliant with EC EMC and Low Voltage Directives. See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4 5 6 7 8

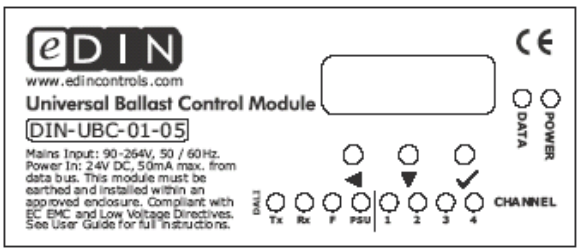

eDIN
www.edincontrols.com
4 x 3A Leading Edge Dimmer Module
DIN-03-04
Mains Input: 230V ±10%, 50 / 60Hz. Power In: 24V DC, 50mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Suitable for dimmable inductive or resistive loads. Total 10A maximum.
Compliant with EC EMC and Low Voltage Directives. See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4


eDIN
www.edincontrols.com
4 x 5A Relay Module
DIN-RP-05-04
Power In: 24V DC 80mA max. from data bus.
This module must be earthed and installed within an approved enclosure.
Contacts: 250V max, 5A inductive or resistive. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
OUTPUT
1 2 3 4

eDIN
www.edincontrols.com
Power Supply
DIN-PSU-24V
Mains Input: 90-264V, 50 / 60Hz.
This module must be earthed and installed within an approved enclosure.
Total 1A output max. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.


eDIN
www.edincontrols.com
8 Channel I/O Module
DIN-INT-00-08
Power In: 24V DC 50mA nom. 850mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
CHANNEL
1 2 3 4 5 6 7 8

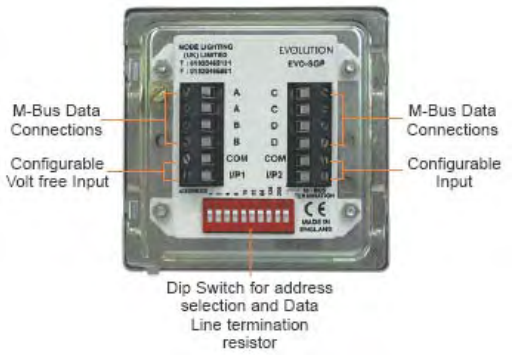

eDIN
www.edincontrols.com
Network Processor Unit
DIN-NPU-00-01
Power In: 24V DC, 250mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
Tx Rx C 100 F Lk D IP


eDIN
www.edincontrols.com
Universal Ballast Control Module
DIN-UBC-01-05
Mains Input: 90-264V, 50 / 60Hz.
Power In: 24V DC, 50mA max. from data bus. This module must be earthed and installed within an approved enclosure. Compliant with EC EMC and Low Voltage Directives.
See User Guide for full instructions.
DATA
POWER
CHANNEL
DALI Tx Rx F PSU 1 2 3 4

EVO-SGP-55 front view

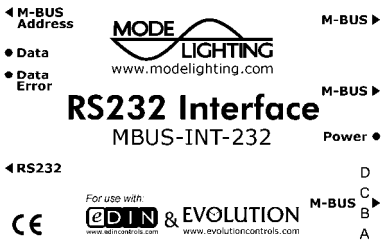
EVO-SGP-50 front view

EVO-SGP-20 front view

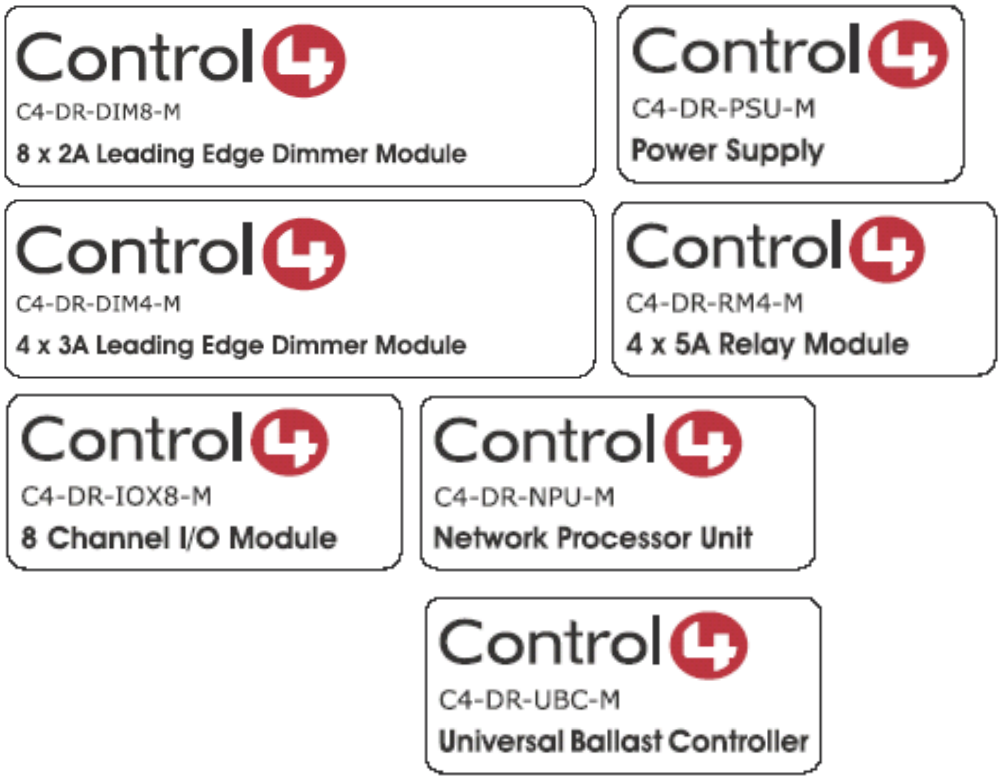

M-Bus Data Connections
Configurable Volt free Input
M-Bus Data Connections
Configurable Input
Dip Switch for address selection and Data Line termination resistor

EVO-SGP-55/50/20 rear view

EVO-INT-CI-04



Product Labels Control4 DIN:



Limitation of Coverage:

The Mode eDIN /Control4 DIN Lighting Control System was reviewed as a stand-alone product and is based upon the type test and inspection of sample product.

THIS TEST REPORT IS BASED ON:

	AS/NZS CISPR 15 : 2006 CiSPR 15 Edition 7 : 2005 (EN 55015 : 2006) Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
Installation:	Household and similar fixed-electrical installation
Location:	Indoor only
Electric shock protection:	Class 1, mains earth required
Rated supply voltage:	230V +/- 10%
Supply frequency:	50Hz
Rated supply current:	10.0A maximum
Ambient temperature:	0^{o}C to 25^{o}C

DIN-02-08 / EVO-SGP-55

CONDUCTED EMISSIONS to AS/NZS CISPR 15 : 2006 (EN 55015 : 2006)

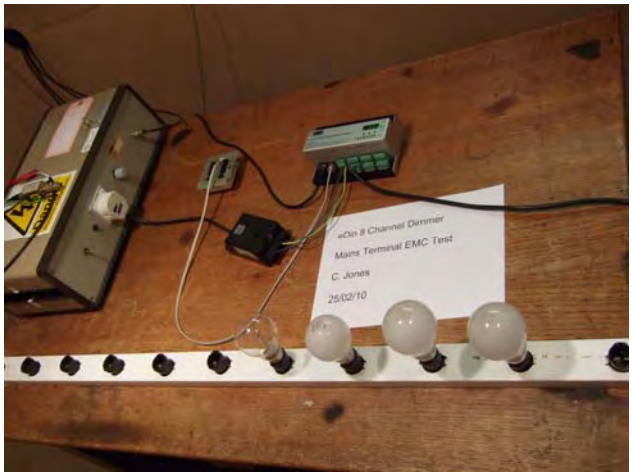
Tested by: C Jones

Test date: 25/02/2010

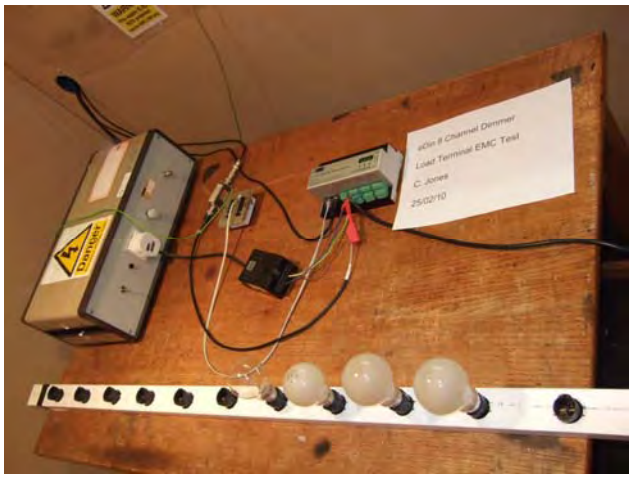
Test equipment used: Advantest R3621 Spectrum Analyser
Chase MN2050 LISN
Tungsten Load Lamps 500W

Model tested: DIN-02-08 / EVO-SGP-55

Test set up: The tests were conducted to circuit 1, with the unit set to 50% (load lamps dimmed to 50%)



Mains Terminals

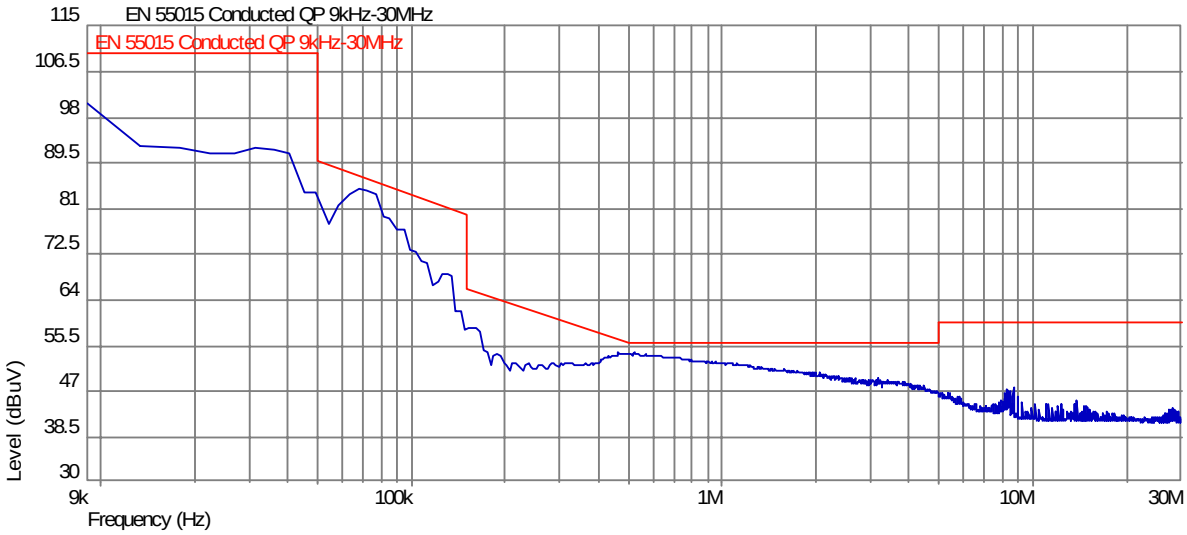


Load terminals

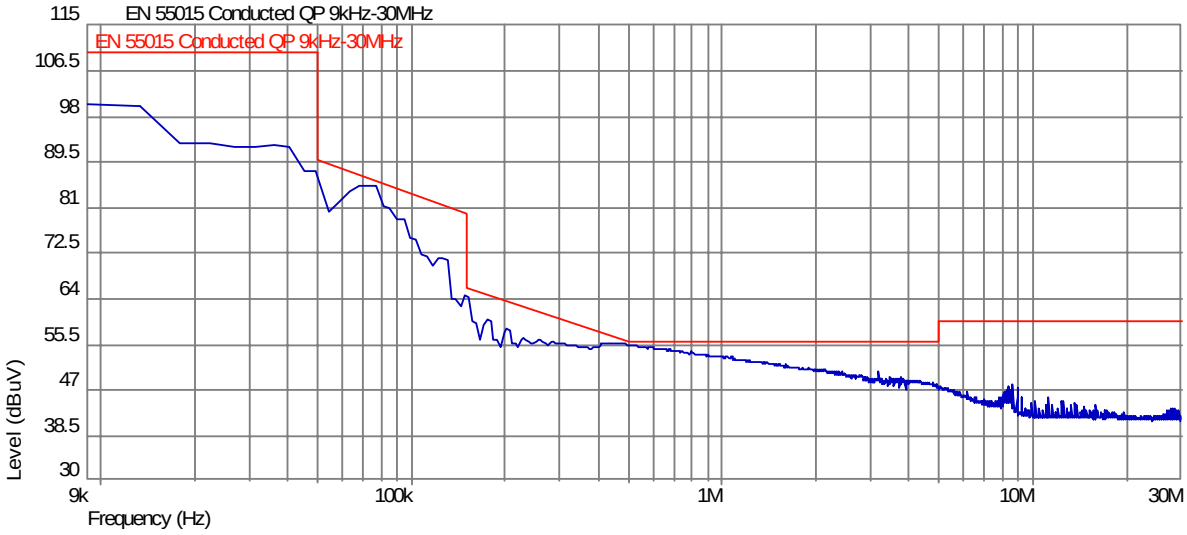
Test result: Pass

Test results

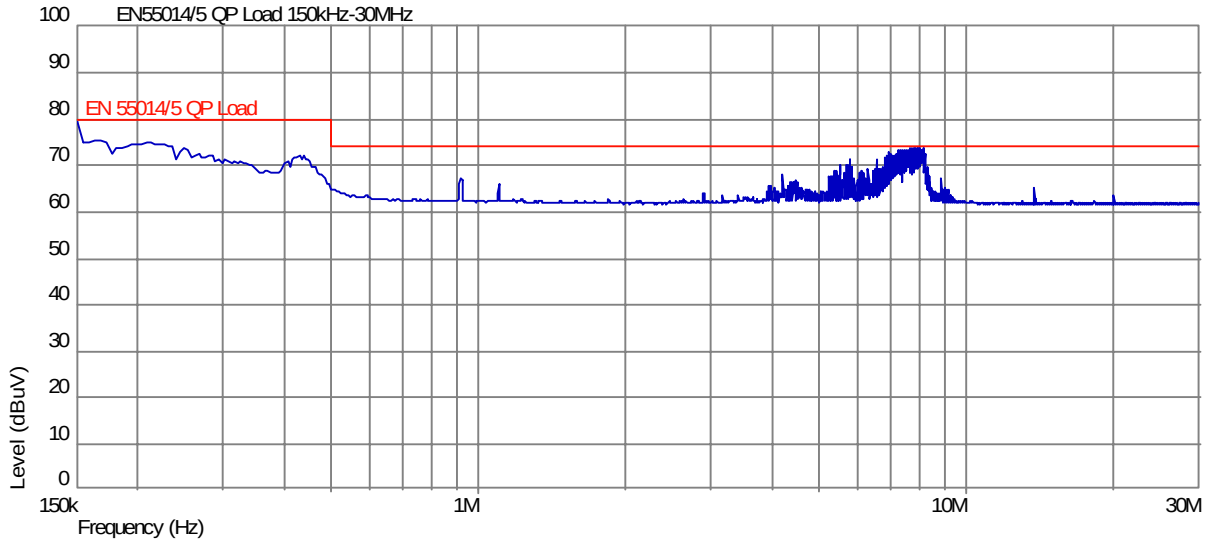
Mains terminals - Live coupling:



Mains terminals - Neutral coupling:



Load terminals:



Note:

The peak at 909 kHz is an ambient, due to the local transmitter at Brookmans Park, approximately 10 miles from the test site, Ware, SG12 9AD. This transmitter radiates 150kW at 909kHz. The extract below is from the BBC website.

BBC Radio Five Live (MW)

	Frequency (kHz)	Power	Grid ref
Barrow	693	1kW	SD218707
Bexhill	693	1kW	TQ744080
Bournemouth	909	0.25kW	SZ070926
Brighton	693	1kW	TQ234051
Brookmans Park	**909**	**150kW**	**TL259050**
Burghead	693	25kW	NJ125685
Clevedon	909	50kW	ST400697
Droitwich	693	150kW	SO929663
Enniskillen	693	1kW	H232457
Exeter	909	1kW	SX931881
Fareham	909	1kW	SU546058
Folkestone	693	1kW	TR255389
Lisnagarvey	909	10kW	J258619
Londonderry	909	1kW	C404176
Moorside Edge	909	200kW	SE070154
Postwick	693	10kW	TG303086
Redmoss	693	1kW	NJ942024
Redruth MF	909	2kW	SW709403
Stagshaw	693	50kW	NY986709
Start Point	693	50kW	SX814378
Tywyn	990	1kW	SH581004
Westerglen	909	50kW	NS868773
Whitehaven	909	1kW	NX974172

DIN-03-04 / EVO-SGP-55

CONDUCTED EMISSIONS to AS/NZS CISPR 15 : 2006 (EN 55015 : 2006)

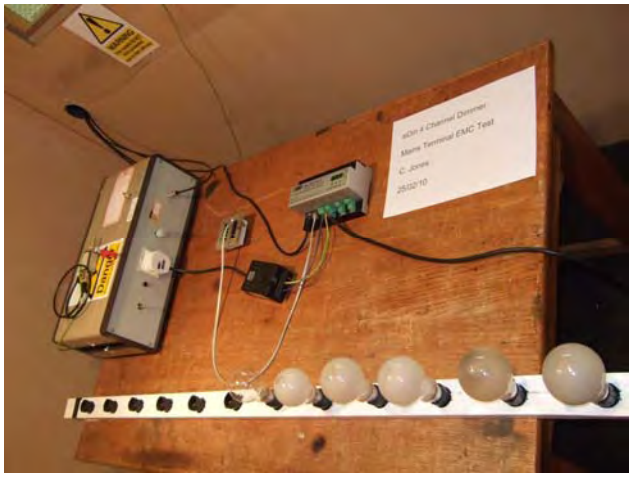
Tested by: C Jones

Test date: 25/02/2010

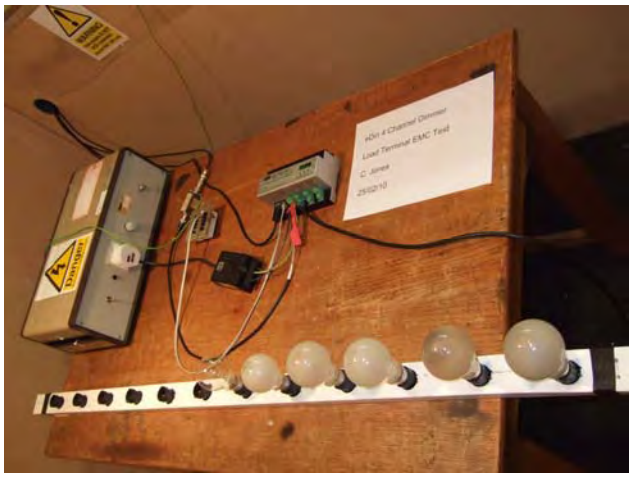
Test equipment used: Advantest R3621 Spectrum Analyser
Chase MN2050 LISN
Tungsten Load Lamps 750W

Model tested: DIN-03-04 / EVO-SGP-55

Test set up: The tests were conducted to circuit 1, with the unit set to 50% (load lamps dimmed to 50%)



Mains Terminals

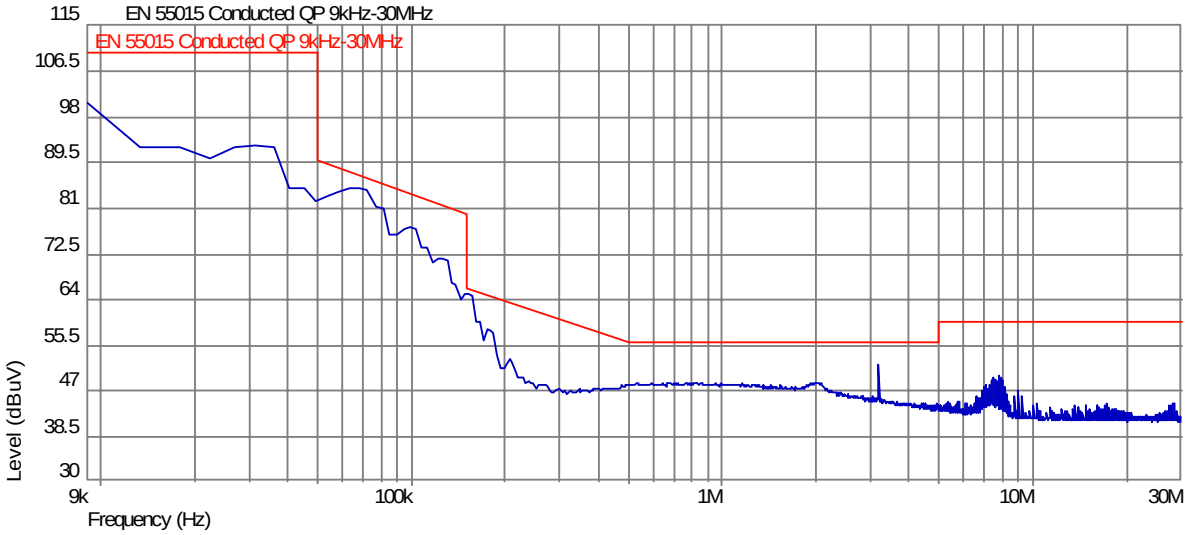


Load terminals

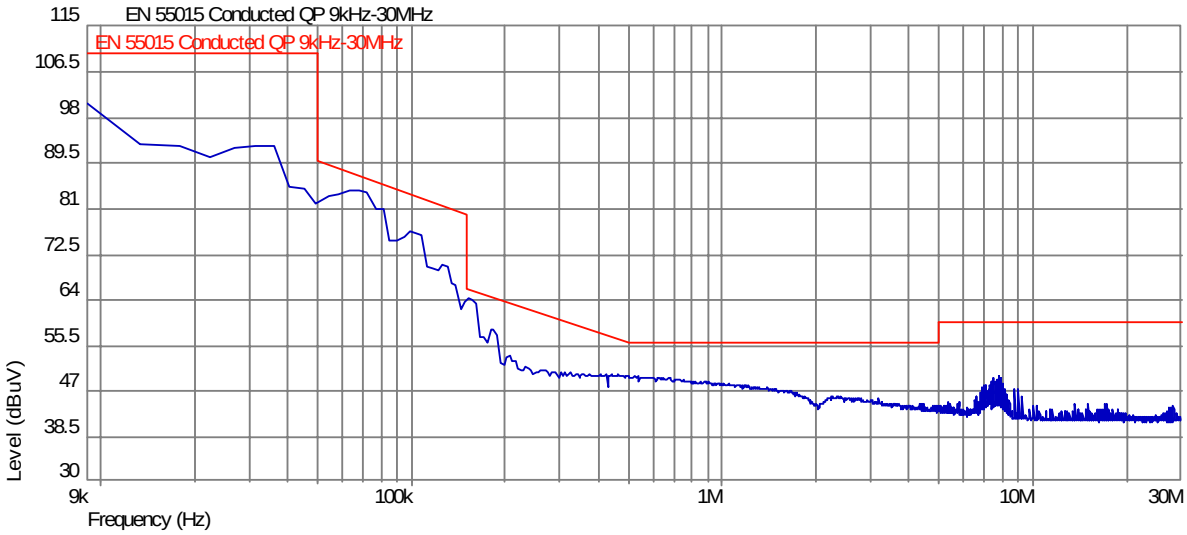
Test result: Pass

Test results

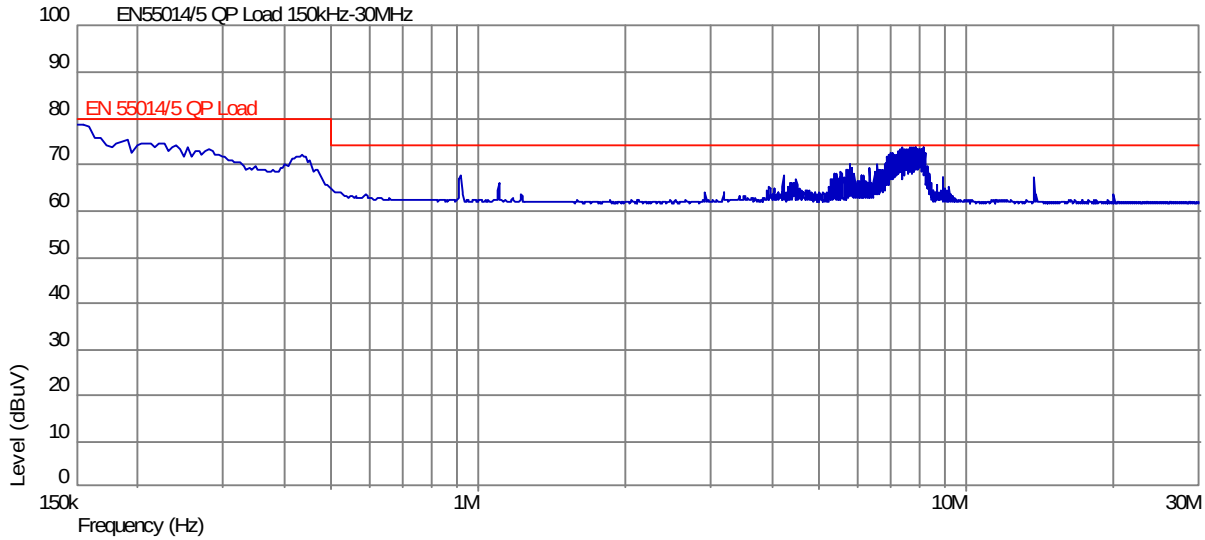
Mains terminals - Live coupling:



Mains terminals - Neutral coupling:



Load terminals:



Note:

The peak at 909 kHz is an ambient, due to the local transmitter at Brookmans Park, approximately 10 miles from the test site, Ware, SG12 9AD. This transmitter radiates 150kW at 909kHz. The extract below is from the BBC website.

BBC Radio Five Live (MW)

	Frequency (kHz)	Power	Grid ref
Barrow	693	1kW	SD218707
Bexhill	693	1kW	TQ744080
Bournemouth	909	0.25kW	SZ070926
Brighton	693	1kW	TQ234051
Brookmans Park	**909**	**150kW**	**TL259050**
Burghead	693	25kW	NJ125685
Clevedon	909	50kW	ST400697
Droitwich	693	150kW	SO929663
Enniskillen	693	1kW	H232457
Exeter	909	1kW	SX931881
Fareham	909	1kW	SU546058
Folkestone	693	1kW	TR255389
Lisnagarvey	909	10kW	J258619
Londonderry	909	1kW	C404176
Moorside Edge	909	200kW	SE070154
Postwick	693	10kW	TG303086
Redmoss	693	1kW	NJ942024
Redruth MF	909	2kW	SW709403
Stagshaw	693	50kW	NY986709
Start Point	693	50kW	SX814378
Tywyn	990	1kW	SH581004
Westerglen	909	50kW	NS868773
Whitehaven	909	1kW	NX974172

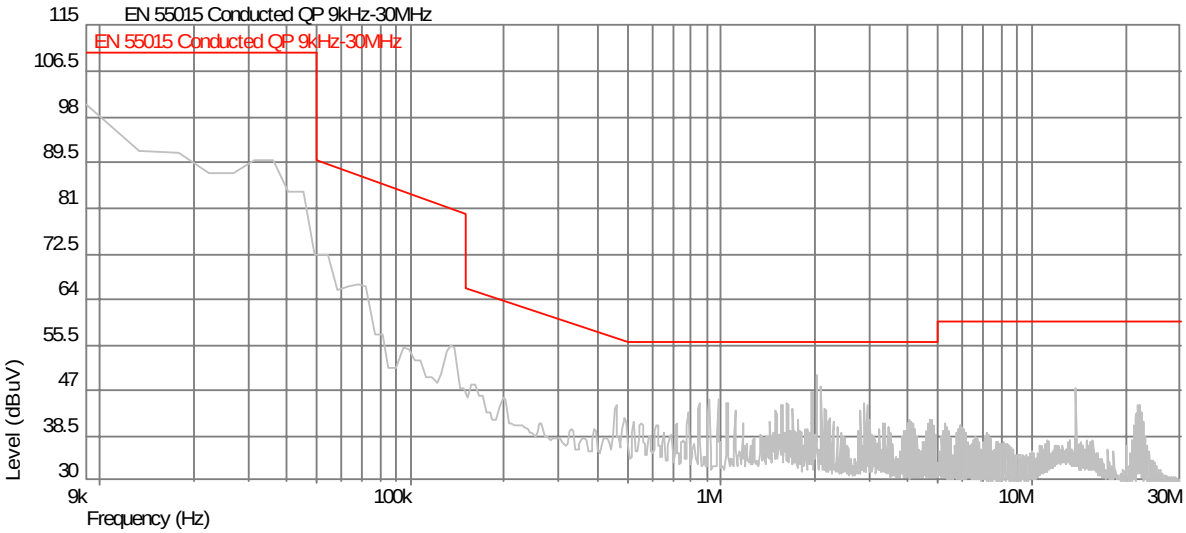
DIN-PSU-24V / DIN-NPU-00-01 / DIN-INT-00-08 / EVO-SGP-55

CONDUCTED EMISSIONS to AS/NZS CISPR 15 : 2006 (EN 55015 : 2006)

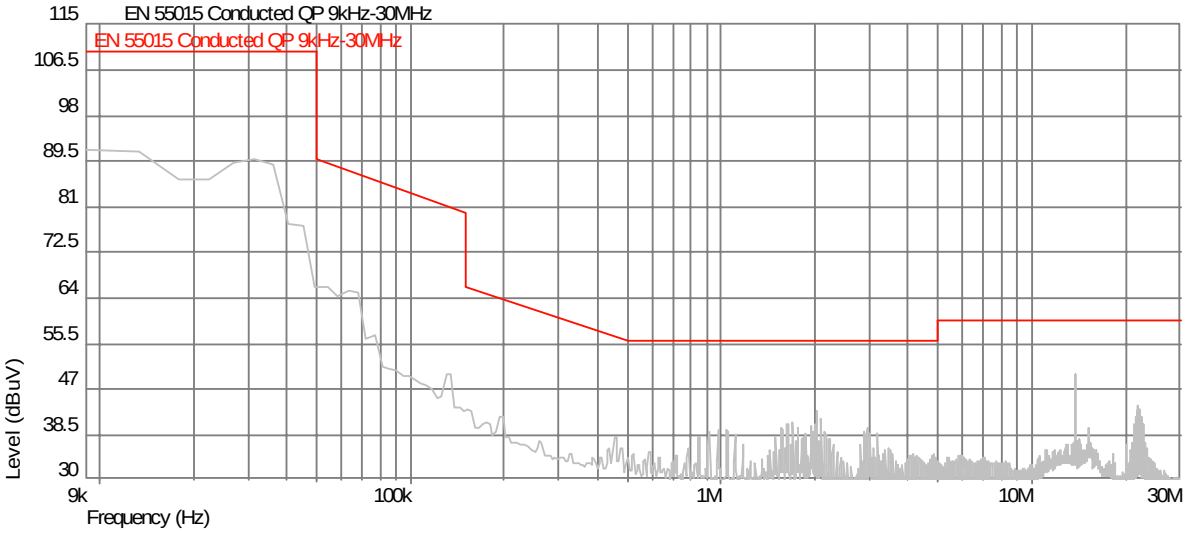
Tested by:	P Hodgskin
Test date:	18/11/2009
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN Tungsten Load Lamps 500W
Model tested:	DIN-PSU-24V / DIN-NPU—00-01 / DIN-RP-05-04 / DIN-INT-00-08 / EVO-SGP-55
Test set up:	The tests were conducted in 'stand-alone' mode with scene 3 selected (all relays closed/on)
Test result:	Pass

Test results

Mains terminals - Live coupling:



Mains terminals - Neutral coupling:

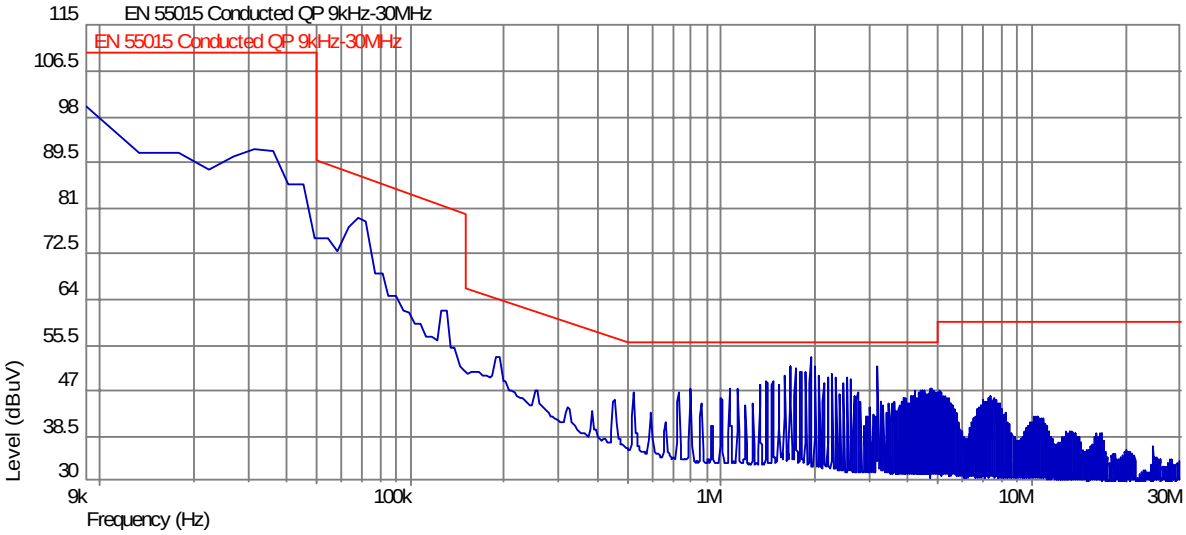


CONDUCTED EMISSIONS to AS/NZS CISPR 15 : 2006 (EN 55015 : 2006)

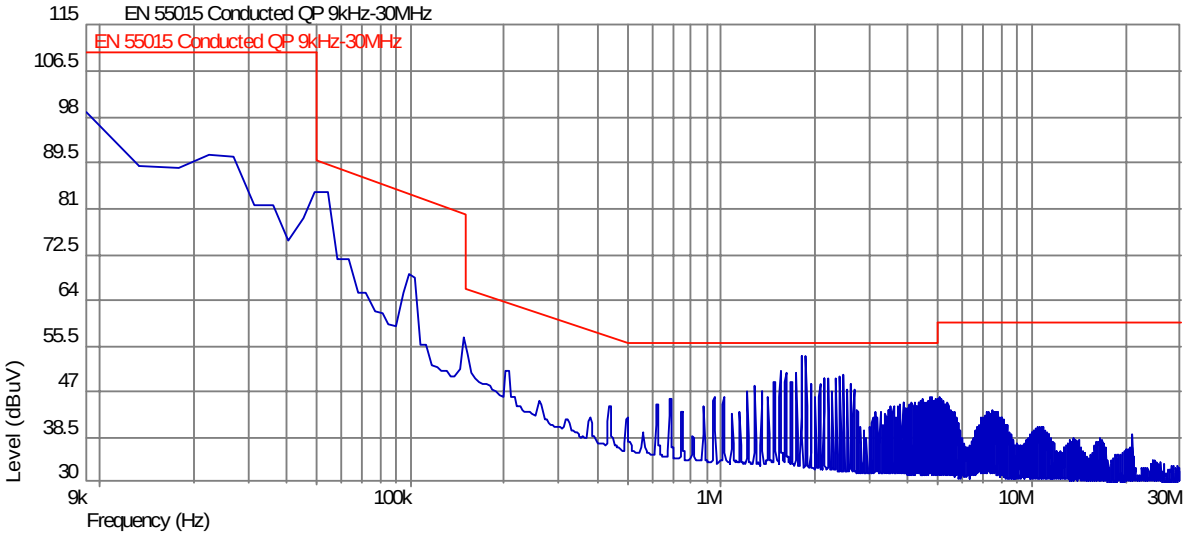
Tested by:	C Jones
Test date:	01/03/2010
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN Tungsten Load Lamps 500W
Model tested:	DIN-UBC-01-05
Test set up:	The tests were conducted at the maximum rated load (24V at 800mA)
Test result:	Pass

Test results

Mains terminals - Live coupling:



Mains terminals - Neutral coupling:



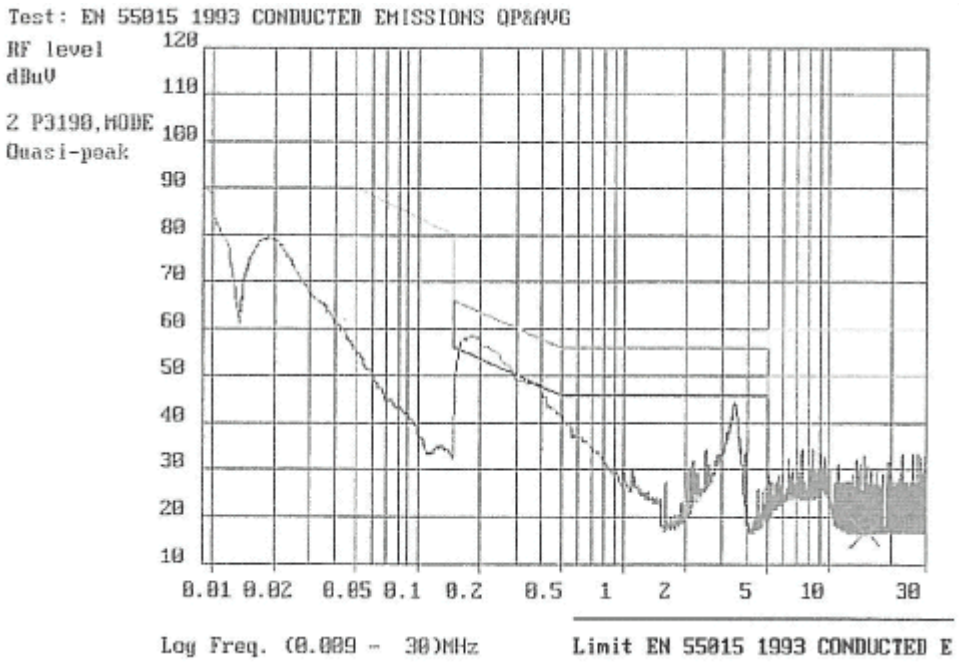
EVO-LCD-55

CONDUCTED EMISSIONS to AS/NZS CISPR 15 : 2006 (EN 55015 : 2006)

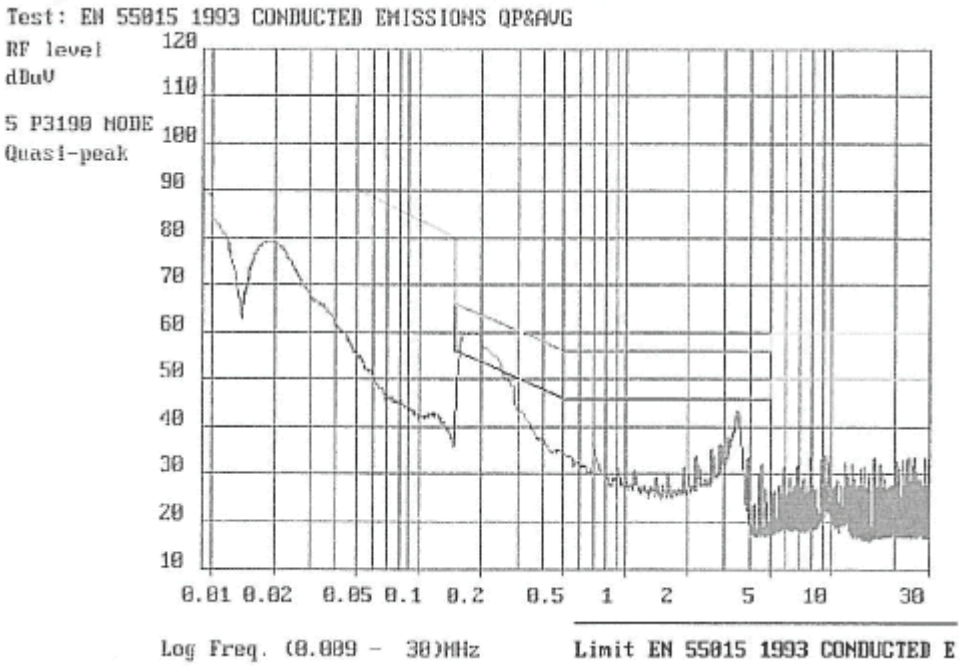
Tested by:	P Carter Chris Jones
Test dates:	02/04/2004 05/10/2006
Test equipment used:	Advantest R3621 Spectrum Analyser Chase MN2050 LISN Tungsten Load Lamps 2500W (10 Amp load) Tungsten Load Lamps 5000W (20 Amp load)
Model tested:	EVO-10-12, EVO-20-06 and EVO-LCD-55 (these models are highest power in range and therefore worst case for the purpose of testing)
Test set up:	The tests were conducted to circuit 1, with the unit set to Scene 3 (default setting, load lamps dimmed to 50%) and Scene 4 (default setting, load lamps dimmed to 25%), whichever was worst case.
Test result:	Pass

Test results – EVO-10-12 and EVO-LCD-55

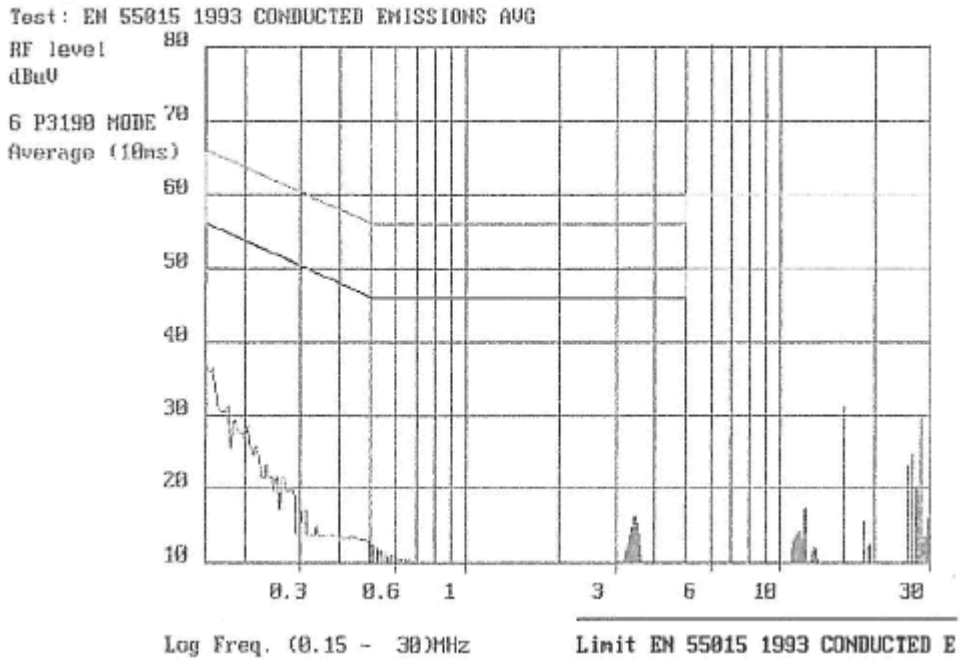
Mains terminals - Live coupling (25% worst case):



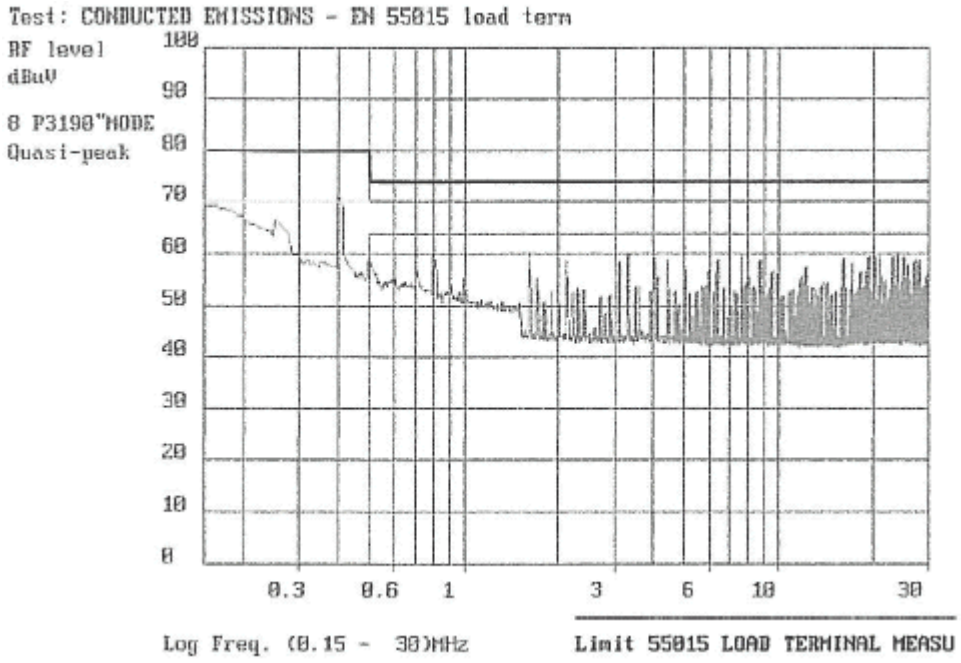
Mains terminals - Neutral coupling (25% worst case):



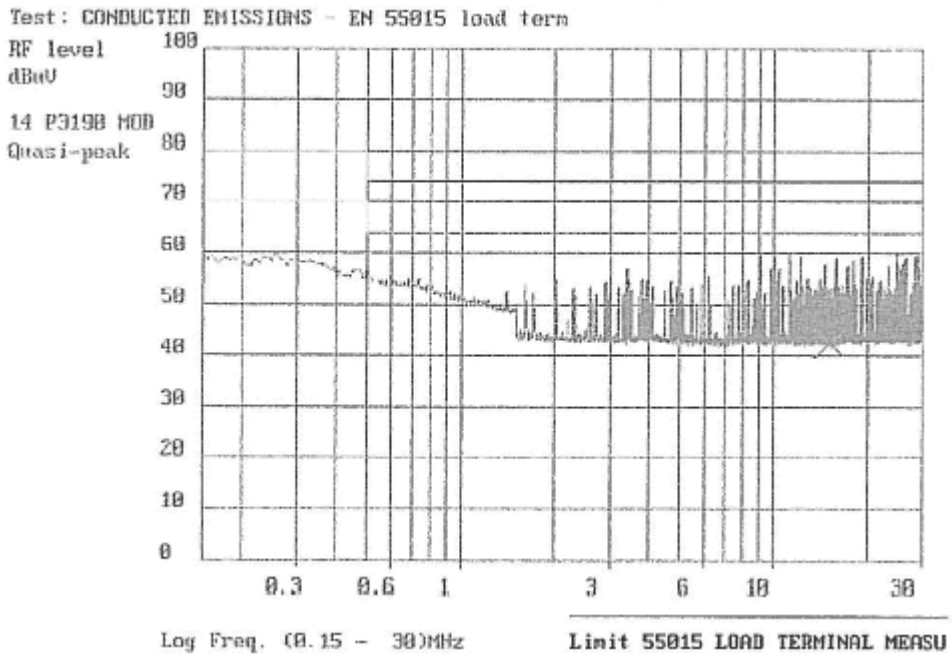
Mains terminals - Neutral coupling (25% worst case) Average Detector:



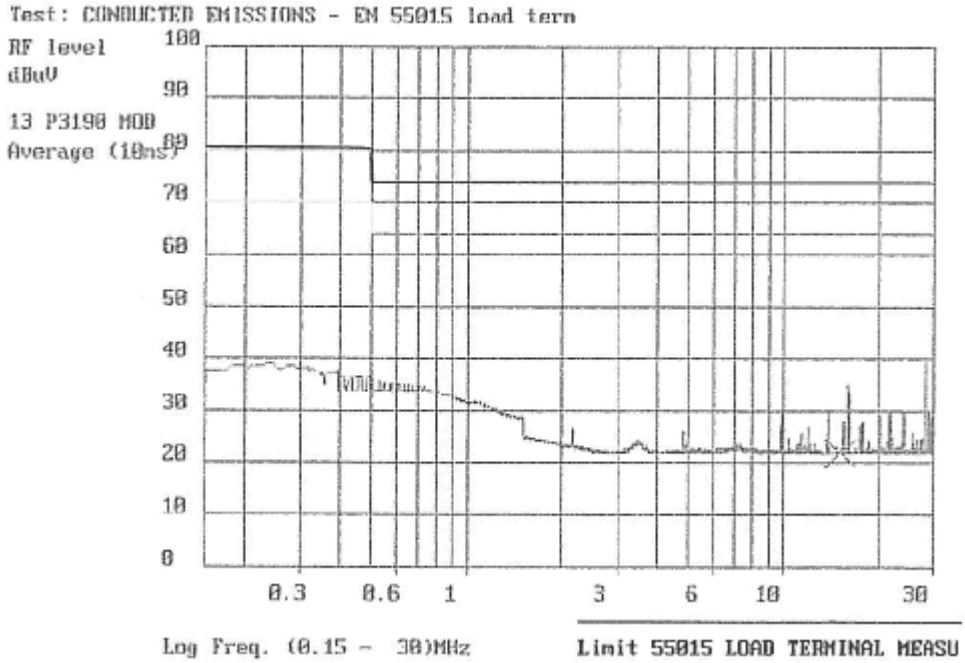
Load terminals - Live coupling (25% worst case):



Load terminals - Neutral coupling (25% worst case):

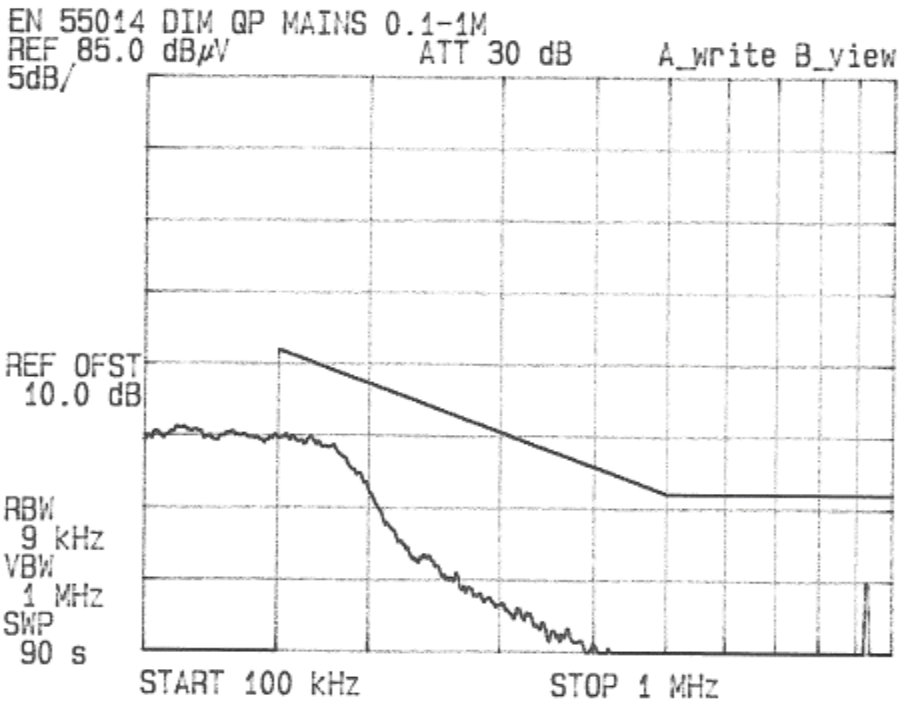


Load terminals - Neutral coupling (25% worst case) Average Detector:

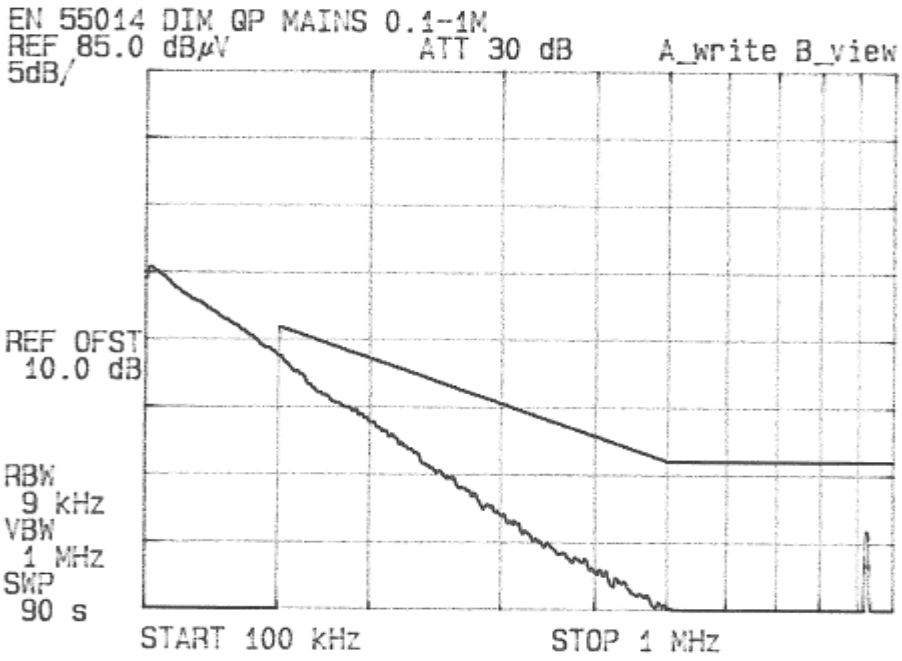


Test results – EVO-20-06 and EVO-LCD-55

Mains terminals - Live coupling (25% worst case):



Mains terminals - Neutral coupling (25% worst case):



Load terminals (25% worst case):